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THE NATURE OF THOUGHT.

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Prefatory Request.—I have been for many years engaged in verifying the doctrine of this essay. But very often the partiality of a thinker for his thoughts hides from him chasms of inconsequence that are apparent at a glance to others. I therefore send forth the essay, not for publication in the ordinary sense, but in order to submit its doctrine to the final and only decisive testing of other minds. My request, very earnestly made, is that those who discover a serious defect in the reasoning of these pages will send a brief notice thereof to my address.[1]

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Chapter I.

The Principle and Self-Consciousness.

All thinking consists fundamentally in a relating of cause and effect. To establish this principle and to make it the groundwork of philosophy is the object of this essay.

Two cautions must first be noted. (1) The principle here given should not be confounded with any later generalizations affirming the uniformity of causation or that "every change must have a cause." All such generalizations give us highly complex products of thinking; the process through which these products have been gained—whether by experience or some mysterious intuitional way—still remains a matter of earnest philosophic dispute. We make here no assumptions; we affirm no postulates of inexplicable *a priori* origin. We seek solely to show *the nature of thinking* by reducing all its varied and complex modes to one elementary form of action. Only thus can the nature of anything be scientifically known.

(2) While all thinking consists in a relating of cause and effect, this relating is often, of course, very crude and faulty. We are continually assuming causes that are not causes and setting effects in false relations; it is the chief office of reasoned or inductive experience to correct these errors. But, while our beliefs are thus continually changing, the nature of the thinking process remains always the same. The process may be carried out to different degrees of perfection, but it must always be essentially a relating of cause and effect.

If the doctrine of this essay can be established, the two chief objects of philosophy are evidently gained. The first object is a *principle of unity.* After that philosophy has always striven and been always baffled. The intuitionalist finds himself confronted by a host of inexplicable intuitions, bearing no mark of kinship save the mystery of their origin. The empiricist reduces all to the unity of experience, but that is very plainly a merely verbal unity; our experience is but the sum total of our mental states, and for this vast aggregate empiricism furnishes no unifying principle. The Post-Kantian philosophy of Germany came nearer to the truth than either; and yet it only reached at last the altogether

paradoxical unity of contradictions. But we have here all thought reduced to the unity of a simple and thoroughly rational process.

The second object of philosophy has been to find *a final criterion of truth.* Since Kant the only criterion much insisted on has been merely subjective, relative to the mental organization of human beings. That of course leaves the question always open, whether there may not be other and higher kinds of thinking freed from the axiomatic necessities imposed upon us by the peculiar structure of the human intellect. Kant was always harassing himself by some such question about a higher or "Noumenal" kind of knowledge different from that merely "Phenomenal" kind to which the human mind was confined; and every one knows what a part this harassment has ever since played in philosophy. But, if the doctrine of this essay can be established, all this vanishes like mist. If the very nature of thinking consists in a relating of cause and effect, then all thinking of all possible orders of intelligences must conform to this nature. A process or activity—higher or lower—which does not conform to it, is not thinking; the products of such a process are not knowledge; the predicates "true" and "false" can no more be applied to them than to sticks or stones. In a word, thinking, although a process having infinite degrees of perfection, is in its nature essentially one. It is absurd to inquire whether there may not be some other kind of thinking *besides thinking.*

We begin now our examination of the different processes of thought. The most rudimentary of these is that mental action which we describe as *self-consciousness.* All knowledge begins, either explicitly or implicitly, with the affirmation: I think. But this affirmation shows itself, upon the slightest reflection, as a relating of cause and effect. Every act of self-consciousness is a synthesis of these two ever-present elements: the I conceived as the, at least, partial cause of its own thought—the one and permanent cause of the present mental state, of other past states, and potentially of other states still future. You cannot take away either of these elements without mutilating and destroying the act of self-consciousness.

Very simple this seems, and yet to an ignoring of it some of the most fatal metaphysical errors have been directly due. First

and most important of these errors is Hume's doctrine of the mind as merely a series of conscious states.

It is admitted upon all sides that the testimony of consciousness is here final; if its testimony in regard to our own thoughts is rejected, all possibility of knowing anything is at an end. The only question is: To what does self-consciousness testify? Hume and his followers say: Solely to a series of conscious states. But that is a phrase absolutely without meaning, except as we refer this series of conscious states to some permanent identity that is conscious of them. The two elements—the effect and its cause, the conscious state and the one conscious of it—are so indissolubly united that we are unable, not merely to think, but even to express the one without affirming the other. In a word, the testimony of consciousness, according to Hume's version of it, is utterly worthless, for the simple reason that it is entirely unintelligible and self-contradictory.

J. S. Mill saw this with sufficient clearness to confess that Hume's doctrine "involves a paradox"; and that "it cannot be expressed in any terms which do not deny its truth." He attempts, indeed, to break the force of his admission by suggesting that we are here in the presence of "an ultimate and inexplicable fact." But that is mere evasion. The question here is not concerning the explanation of a fact, but concerning the meaning of testimony. And very plainly testimony which is incomprehensible, which cannot be expressed save in self-contradictory terms, is evidence of nothing save its own worthlessness. Hume and his followers, then, virtually annul the testimony of consciousness by eliminating from it all that gives it intelligible meaning.

Of similar import is Kant's doctrine. All his argumentation in regard to this matter revolves around the conception of the soul as substance. But the category of substance and accident is a derivative one, the result of a complex process hereafter to be described; and it is easy enough for Kant to show that the simple act of self-consciousness does not affirm self under any such derivative and complex conception as this. Hence his thoroughly agnostic conclusion that the self is not given in self-consciousness, is only assumed as the ideal object of a "rational faith." All these agnostic perplexities vanish instantly before the doctrine of this essay. Self-consciousness is a relating of cause and effect. It relates our

mental states not as qualities to a substance, but as effects to their one and permanent cause—as thought to a thinker. This synthesis of thought and thinker can never be dissolved. Whoever attempts to dissolve it will only take all meaning out of, and so virtually annul, the testimony of consciousness.

Consider now the doctrine of Fichte, in whose system the whole Post-Kantian philosophy is germinally infolded. Fichte's doctrine is the precise antithesis to that of Hume; the initial error of each is complementary to that of the other. Hume saw in self-consciousness only an affirmation of successive mental states. Fichte, upon the other hand, lays stress solely upon the affirmation of self. As the starting-point for his constructions he takes the proposition that "the fundamental activity of all consciousness is the affirmation of the self by the Ego." But that is as one-sided and misleading as the counter-statement of Hume. Consciousness does not affirm self in the Fichtean sense—that is, absolutely; nor does it affirm the successive mental states in Hume's sense—that is, absolutely. Thought cannot be known except as related to its cause, the thinker; nor can the thinker be known except as related to his effects or thoughts. No knowledge—no intelligible meaning even—emerges until we put together those two elements which, kept apart, are both equally unknown and unknowable.

Does the criticism seem too minute? But just here, in Fichte's exposition of self-consciousness, was generated that doctrine of absolute identity that so long ruled and finally ruined the Post-Kantian philosophy of Germany. Self, according to Fichte, affirms itself; is at once subject and object; "in the absolute identity of subject and object consists the very nature of consciousness" (*Werke*, ii, 442). But this identity, so far from being absolute, is entirely dependent upon a loose, vague form of speech. Self affirming self is not a perfect but a fatally mutilated description of self-consciousness. What self-consciousness really affirms is a relation existing between conscious thought and its cause. A trivial distinction? And yet this initial error, seemingly so slight, vitiated the whole course of what, in many respects, was the most splendid speculative movement of modern times.

We have, then, not merely established our principle so far as self-consciousness is concerned. That was, comparatively, an easy task. But the principle has also been shown, I think, as the only

true starting-point of philosophy. The one-sidedness and the conflicts of philosophic systems are grounded in the failure to recognize that every process of thought must be fundamentally a relating of cause and effect.

Chapter II.

Perception.

My conscious experience, then, is primarily presented before me as a succession of mental states of which I am, partially at least, the cause. But between these states there is a marked difference. Of those called imaginative, I am conscious as almost entirely the effects of my own activity; although even here I only put together material furnished from other sources. In the recollective states my consciousness of productive or controlling power is still less; in the perceptive states it sinks to its minimum. Around these last the disputes and divisions of philosophy have always centred; and they therefore demand a special consideration.

Although in perception my own causal activity is at its minimum, it is still always present and indispensable. Without some conscious putting forth of mental effort there is no perception. When the mind is attending to something else, the most vivid phenomena may pass by without being perceived. But in every perceptive thought there is an element of which I am conscious as being beyond my control—a regular recurrence of the parts, a fixed order of the whole which no mental effort of mine is able to change. Every perception contains an element that I relate to myself as cause; but also a much larger element that I cannot thus relate. But this also, by the very nature of thought, must be related to a cause or causes. And so instantaneously with the first dawn of consciousness I gain the conception of an external world —the sum-total of the causes producing effects of which I am conscious, but which I cannot control.

The exposition is summary; and a suspicion may thus be excited that it glides over the real difficulties of the question without solving them. That it does not may best be shown by comparison with other philosophic systems.

First: Consider the *Philosophy of Common Sense*, declaring perception to be an ultimate, inexplicable fact admitting of no analy-

sis. But that doctrine is merely the last refuge of distressed philosophers. It has absolutely nothing in its favor except that the perceptive problem has not yet been solved. By what right does any one pronounce perception a simple, indecomposable act, defying all analysis, when upon its very surface it appears as complex in the highest degree? There is, first, the idea of a perceiving mind, then of a peculiar mode and measure of the mind's activity, then of an object perceived—and these three interacting in an endless variety of subtile implications. A sensation, by itself, is an exceedingly complicated process, a chain of movements of which we only know a link here and there, while the rest are secluded in the deepest darkness. But a perception is the resultant of many different sensations modifying each other, and all modified by the almost automatic action of the mind. All this complexity is not made simple merely because we can express it by the simple word "perceive."

A peculiar form of the Common-Sense philosophy is the doctrine of Hamilton, and perhaps of Reid, which attempts to prove the reality of objective existence from the testimony of consciousness. That seems to me specially objectionable. The office of consciousness is to testify to inner phenomena; when its authority is stretched over the whole outer universe, it ceases to be a guarantee for anything, either within or without. The authority of consciousness thus impaired, philosophy has no starting-point of certainty, and can make no progress. Nor is anything really gained toward proving objective existence. To say that I am conscious of the existence of the object is merely to say that I *know* it exists. We have only the old argument, or rather assertion, of the common-sense philosopher put in a new and more objectionable form.

Second: Hypothetic Dualism, as it has been called since Hamilton's day. This, the generally accepted doctrine of philosophic thinkers in all ages, I characterize as a crude and provisional statement of the truth. Part of that crudeness has already passed away. We hear little more of the representative images that once played so great a part in philosophy. Instead, the antithetical elements in perception are quite generally expressed in terms of cause and effect.

But a more serious defect still clings to this doctrine. It rests

the reality of the sensible world upon some intuitive or instinctive inference that the mind is compelled to make from the effects produced upon it. I object to this on two grounds. First, to the hypothesis of intuitions therein contained. One of the chief objects of this essay is to do away with that motley host of intuitions—mathematical, physical, and moral—that have been so arbitrarily assumed in philosophy; or rather to explain them—in the scientific sense of explanation—by reducing them to the action of a common principle; in other words, to show them not as mere instincts mysteriously implanted within us, but as necessarily resulting from the very nature of thought as a relating of cause and effect. And so in the present case, instead of regarding my belief in objective existence as merely one in an incongruous host of inexplicable instincts, I look upon it as a postulate necessitated by the very nature of thought.

Secondly, I object to considering the belief in objective existence as an inference. An inference implies succession of ideas; one or more thoughts being present, from them I infer something consequent. But this is impossible in the present case; for, from the very nature of the thinking process, the effects produced upon me only become thoughts by being related to their cause. Instead of the cause being an inference from the effect, both are given together in the first flash of real thinking; each is the necessary complement of the other in that indissoluble synthesis which alone constitutes a perfect thought.

Let this last distinction be adhered to as something supremely essential. We must fully realize that the uncertainty of mere inference is something very different from that absolute certainty and that perfect fusion of elements which are shown in perception. It is this aspect of certainty and complete fusion which has induced some to describe perception as an ultimate fact defying all analysis. But we have now analyzed it.

Thirdly: Subjective Idealism.—This is rather a philosophic enigma to be solved than a doctrine to be rejected. No one really believes a doctrine so paradoxical. And yet philosophy—much to its disgrace—has never been able to precisely point out the fallacy upon which the paradox rests; has contented itself, for the most part, with sneers and assertions. But from our present point of view the enigma is readily solved.

The root of the paradox lies in an attempt to philosophize over mere figures of speech—purely physical expressions adopted by common language as a crude description of mental phenomena. In this loose, figurative way we distinguish between the internal and the external, as if self was a mystic sort of vessel within which are thoughts and without are things. Starting from this, the subjective idealist bewilders himself over the problem: how to pass from that which is within to that which is without. But such terms as internal and external, within and without, when applied to mental phenomena, have no significance for philosophy. They are purely spatial terms, strictly applicable only to physical things; and, however useful in common speech, whenever we apply them with literal exactitude to thoughts, and attempt to philosophize over them, we fall, of course, into bewilderment and paradox. True philosophy will refuse to thus bewilder itself with figures of speech. It will discuss the problem of thought only in the terms prescribed by the very nature of thought—terms of cause and effect. Thus strictly stated, the problem becomes a very simple one. Ideas, mental states, are, *by themselves*, utterly unthinkable; they become objects of knowledge, or even of thought, only by being put into causal relations with something else. The true antithesis—not that of internal and external, but of ideas and something related to them as their producing cause—is necessitated by the very nature of thought.

But the subjective idealist may object that he does not deny the causality; he merely affirms that the ideas have no cause but self—there is nothing but the thinker and his thought. But this is really but a bewildered and roundabout way of annulling the testimony of self-consciousness. We have the causality, as we have seen, given by the very nature of thought. The special purpose of self-consciousness is to *separate* from this causality the self as partial cause and to affirm its limitations. To break down these limits, to make self inclusive of all causality—is not that evidently to annul the testimony of self-consciousness, the very object of which is to establish this line of separation?

Through this we see the real character of subjective idealism. It is a volatile and elusive form of speculation that will never assume any really definite shape except to him who recognizes it as a mystified form of materialism. Both start from a common error,

the effacing of the distinction that self-consciousness establishes between what is produced and what is not produced by self; both thus reach a common conclusion, that all is produced by a homogeneous causality. The only difference between them is that one calls this cause matter, the other calls it mind. But this for them is a difference in sound, not in sense. Both, by contradicting self-consciousness, have taken away all possible ground of distinction between mind and matter.

Fourthly: Objective Idealism.—We have found three certainties attested by the conjoint action of self-consciousness and the nature of thought: First, ideas or mental states; second, self as the partial cause of them; third, a not-self or objective causality. To deny, or even to doubt, these certainties is absolutely impossible: for denying or doubting is a process of conscious thinking, and every process of conscious thinking, when fully unfolded, has been seen to involve in its very nature these three affirmations. The negation of them means the cessation of thought. Since, now, objective idealism denies neither of these three primary affirmations, it is but a comparatively harmless and inoffensive kind of skepticism. In fact, it is hardly skepticism at all in any practical sense, but merely an attempt to explain the relation between the objective causality and our mental states. Its vice is that it is mere dogmatism; an attempt to forestall the work of scientific experience, to put *a priori* speculation in the place of induction.

The explanation thus attained is well known. It assumes, first, that all causal action proceeds from one Infinite Being; secondly, that all perceptions are produced by this Infinite Cause acting directly upon the finite mind without the intervention of any mediate agencies. All, therefore, that seems to intervene between this Cause and my perceptive states—that is, the whole mechanism of heaven and earth—is mere dream and illusion. But plainly this is a very futile kind of explanation. It has, first, no ground in reason; if there is an objective causality capable of thus acting directly upon finite thought, it is impossible to conceive why it should not produce other effects quite independent of the perceiving mind—other action more permanent and orderly than these fugitive impressions that come and go before our consciousness. Secondly, it explains nothing; it leaves all the facts—especially of the historic and geologic past—in a far deeper mystery than

before. It is, in fine, an explanation founded upon the most violent assumptions, and in itself far more inexplicable than that which it pretends to explain.

Against all this, objective idealism has but one argument. We can know, it asserts, nothing but the effects directly produced upon the mind; we are conscious only of sensations, mental impressions; bodies or substances from which these effects are supposed to proceed are but figments which the mind invents to give unity to its perceptions; even if such substances really existed, we have no means of knowing anything about them. Such, in brief, is Berkeley's argument, so often declared invincible even by those who reject its conclusion. Nor, indeed, can it be answered save through the doctrine of this essay.

That answer is now evident. Thought is a synthesis of cause and effect. It is not possible for reason to annul this synthesis so as to contemplate or to gain an independent knowledge of the effect by itself or the cause by itself. Is it not apparent—despite Berkeley's assertion—that I have no knowledge of mental effects, impressions, or sensations by themselves? I have, indeed, some indistinct glimpse of a physical process of effectuation leading from the object into the bodily organism. But at the very point where the physical process is transformed into a mental effect it entirely eludes me. The process passes into the deepest darkness. It emerges again into the light of consciousness as an idea, a perception. But *now the idea of an effect produced is inseparably conjoined—fused with the idea of a producing cause.*

No effect, then, can become an object of knowledge, or even of thought, save as related to some cause, and conversely no cause, save as related to its effects. With this we leave the Berkeleian argument, that sole support of the thesis of objective idealism. One matter remains to be noted.

The Progress of Experience. — Our first crude perceptions naturally present objective causality to us as a vast concourse of things or substances. Our sensations of color, figure, resistance, etc., are given to us in fixed and persistent groups; and each of these groups of effects, actual and potential, is naturally related by us to one permanent cause. But this first crude view of objective existence has been changed by the progress of scientific experience, as we shall see hereafter. For the present let us remember three

things: 1. These changes, although having an idealistic drift, do not support the extreme conclusions of idealism. 2. They have been established by strict processes of inductive proof, not by *a priori* speculations after the fashion of the idealist. 3. However much our view of objective existence may be modified, the fundamental principle of thinking is never changed. There can be no thinking where there is no relating of cause and effect.

The foregoing criticism of the different theories of perception has, of course, been very fragmentary and imperfect. But enough has been done, I trust, to establish our principle, and to show it as the only possible pathway out of the perplexities and endless disputes that have heretofore gathered around the problem of perception.

Chapter III.

Classification.

The whole subject of classification has been so confused by one-sided systems of thought that it is necessary to begin with a brief criticism of the different tendencies of logical speculation.

First, Ancient Realism.—It is the fashion of modern thought to dismiss this with disdain. But disdain is not the method of genuine philosophy, especially when it deals with natural tendencies of the human spirit that have crystallized into great systems of thought. It is pure folly to wave aside Realism as a mere vagary of the middle ages. It was the ruling impulse in all ancient philosophy, Greek, Roman, or Oriental. Aristotle, although he wages war against the mere poetry of the Platonic realism, is himself a thorough realist, especially in his physical inquiries. But why speak of the ancients? Realism, although no longer formally defended, is just as pervasive in our modern thought.

The *origin* of this wide-spread realistic tendency is readily apparent from our present point of view. I find many different bodies or substances affecting me in precisely similar ways—producing precisely similar effects or sensations of redness, roundness, solidity, etc. It follows, from what we have seen to be the very nature of the thinking process, that this similarity of effects can only be thought by being related to some producing cause. And the first crude efforts of the mind to express this causality give

rise to the conception of *qualities* inherent in substances. And, when a certain set or fixed grouping of qualities is noticed as always present in a number of objects, there arises the further conception of the specific, the generic force, or, in realistic terms, of the Universal.

Scientific experience has long since passed beyond these first crude conclusions. We no longer speak of occult qualities, of universals inherent in bodies. Still science is perfectly true—must be true from the very nature of thinking—to the principle from which Realism started. We cannot think in any exact manner of the uniformities of effect presented before us except by relating them to their producing causes; we speak, indeed, not of occult qualities, but of laws, forces, Nature; but we can never get beyond that necessity which demands in every thought some synthesis of cause and effect.

The *vice* of Realism is now also apparent. It assumed that these first hasty generalizations of experience were final. It conceived mere words as actual existences, and attempted to explain from them the phenomena of the Universe. We fall into the same error if we think, as so many do, of "laws" or "natural forces" as anything more than generalized expressions or formulas of causality. For herein is the vice of all Realism, ancient or modern; the arrest of thought upon a mere word or formula; the refusal to seek further and in a wider range of experience for that causality of which the given word or formula is but a provisional expression.

Second, Nominalism.—The Nominalists have been perfectly successful in their attack upon Realism—in brushing aside that web of dialectical subtilities which crude, confused thought is so apt to spin. But beyond this purely critical function they have accomplished nothing; their doctrine has only negative merits to commend it.

Everything in Nominalism hinges upon the idea of conceivability; and this ambiguous word is always used in the narrow sense of what can be pictured before the imagination. Berkeley's whole polemic against general notions revolves around this fallacy. I can frame, he incessantly argues, the idea of an individual object—a man, for instance; but I cannot form the idea of man in general; I must make it of a particular color, size, etc.; and so

the generality of the conception vanishes. Hamilton seemed at times aware of the fallacy, and yet built upon it his Philosophy of the Conditioned. Spencer has reared a still vaster structure upon the same fragile basis.

But not even from the most one-sided materialistic standpoint can this view be vindicated. Even in an external perception, only the visual elements can be pictured; what comes through touch, hearing, or any sense but sight, is absolutely unpicturable. The Nominalistic argument, then, does not apply even to the whole sensible world, but only to the, by itself, phantom-world of sight.

Again: Berkeley argues upon the same ground that we cannot form the abstract idea of motion apart from the idea of some moving body. But not even instantaneous photography—much less the faint picturing power of phantasy—can picture a moving body; it can only give the attitude of movement, and from that the mind infers that the body is moving. According to the test of picturability, the idea of a moving body is no more possible than the idea of motion.

A true idea, then, even of an individual body, is essentially *un*-picturable. Only a small part of it—the visual element in the perception—can be dimly portrayed by the imagination: and that part is merely a sign to call up the complete idea. And yet Nominalism insists that general ideas are impossible, because they are unpicturable.

Dismissing, then, these disputes, we have now to determine the nature of the classifying process. The key to the problem I find in the distinction between the denotation and connotation of general terms. That distinction has, of course, been recognized by all logicians, Nominalistic or otherwise; but they have used it merely as a logical plaything, without any suspicion of its real value as disclosing the inmost nature of all concepts. Let us see, now, how the denotation and the connotation of general terms are related to each other.

First, the denotation is *indefinite;* it may include very many individual objects, or very few, or even none at all, as in the case of imaginary concepts—centaurs or other fabulous animals, for instance. It is also *variable* by circumstances; the number of individuals included in a class is always changing from time to time;

it is an undefined multitude in continual flux. On the other hand, the connotation is always definite and invariable. A concept may connote but a single attribute, and that, of course, is constant; in the case of Natural Kinds an exhaustless series of qualities is connoted, but still the connotation is fixed and uniform for every possible member of the class. Secondly, the denotation points to a *multiplicity*, a mere aggregate of unknown individuals. The connotation, on the contrary, points to unity; this, as a matter of course, when only a single quality is connoted; and in the case of Natural Kinds the different attributes are always conceived as one set—a co-ordinated system—a unity so definitely fixed by Nature that from the presence of some of its parts we can infallibly infer the rest. Thirdly, the denotation is merely *potential*. No general term, by itself, can actually denote any particular object; it can only do so by the help of the article or other demonstrative words, or through its position in the sentence. The connotation, on the contrary, is actual. The word Man, for instance, in and by itself does actually connote certain attributes; it *may* denote or point out certain individual objects by the help of other words.

Fourthly, and most important of all, the denotation is always *conditioned* by the connotation. Whether a particular object can be designated by a given general term depends entirely upon what attributes are connoted by that term. The denotation refers to a possible collection of resembling objects; the connotation specifies that upon which the classification depends. The one points to individuals grouped; the other to that which groups them. The one designates potentially resembling objects; the other that which causes their resemblance.

Thus the real nature of the concept is disclosed with surprising clearness. Its double meaning is a synthesis of two elements related to each other as cause and effect. The fourth distinction, above, directly demonstrates this. The other three corroborate it, since they show in the denotation the precise characteristics of an effect—change, multiplicity, and potentiality; and in the connotation precisely the characteristics of a cause—permanence, unity, and independence.

Only two brief suggestions can here be given concerning the application of this doctrine to the logical controversies so long pending. First, Nominalism is explained as an undue emphasis

laid upon one of the two elements in every general idea, and an ignoring, so far as possible, of the other. The Nominalist insists that a concept is merely a name for a collection of resembling objects. But it is more than that. It points on the one side to resembling objects, but on the other to that which constitutes or causes their resemblance. A collection of resembling objects is, by itself, an utterly meaningless phrase, since every object in the universe resembles every other object in some respects and differs in others. No real meaning emerges until we put together the two elements, in the synthesis of which every general idea consists.

Second, *Conceptualism* lays stress upon the causal element in the concept. It denies the Nominalistic assertion that a concept is merely a name for a collection of objects—a collection which, by itself, is but a vague potentiality, having no actual existence either in nature or in the mind. So far it is plainly right. But Conceptualism, on its own part, has seen in the concept nothing but a bundle of attributes, or a relation of resemblance. But this definition is as vague and unsatisfactory as that of the Nominalist; just as the collection of objects was, by itself, inconceivable, so a relation of resemblance is inconceivable independently of the objects related. The universal law of thought governs here also.

The source of all this confusion and controversy has been the double meaning of the concept. But we have now put these two meanings together in the exact and definite relation of cause and effect: the one determining, the other determined; each supplying the defects and counteracting the vagueness of the other. Through this synthesis we preserve the unity and the distinctness which undoubtedly belong to every general idea, despite its double meaning.

Possibly this criticism of other speculations has been too concise to be fully intelligible. But at least the general doctrine of the essay, it seems to me, has been established. Every concept is shown, through its double import, to be a synthesis of cause and effect. Every common word—the whole structure of language—discloses that process in which the very nature of thinking consists.

Chapter IV.

Reasoning.

The question here of the deepest philosophic interest is: How do we attain to valid universal propositions? And that, in my opinion, is equivalent to the question, What is Induction?

From many repetitions of an event the *expectation* naturally arises that the event will recur under similar circumstances. Such an expectation is sufficient for the savage and the very ignorant; they rarely, if ever, form really universal judgments; they, indeed, expect things to happen in a certain order, but an order liable at any moment to interruption. But a really universal judgment does not merely assert that certain phenomena have co-existed, and probably will again; it asserts the co-existence as something that must be, as necessitated, and therefore as demanding a cause.

Many repetitions of an experience, then, are not sufficient to form, by themselves, an induction even of the most empirical kind. Thought, impelled by what we have seen to be its very nature, relates this oft-observed co-existence to some cause; then, and then only, do we have a really universal judgment affirming an absolutely invariable co-existence of the phenomena. The most empirical induction, then, as well as the most scientific, contains something more than a mere observation of particulars. Both assert causes for the observed co-existences. But empiricism assumes its causes; true scientific induction *proves* them by strict methods.

It would be absurd to attempt any presentation here of the many different and complex methods by which scientific induction transforms an oft-observed coincidence into a law. That by itself would require a volume. I can only briefly notice what is not merely the most perfect method, but also the type to which all the other methods approach. That method is the resolution of the given universal proposition into a simpler and more general proposition. In other words, the assumed principle is shown to depend upon some wider principle. And this process, perhaps, is repeated: and so on, until we attain a proposition of the utmost universality and simplicity conceivable. It is at least the dream

of Science that it will finally attain to one universal proposition or law, under which all the minor laws of Nature may be subsumed and by it explained.

Three results are insured through this subsumption of the minor laws under more general ones: 1. A wider interdependence of phenomena is established. Many minor laws, complex and proportionately narrow, are linked into one of a far vaster range; this into others; and thus the interdependence of all becomes so firmly assured that we are entitled to say of each special law or proposition: This must be so long as the present order of the Universe continues. 2. Exceptions are got rid of. For instance, the empirical rule obtained by mere observation that arsenic kills is liable to exceptions; but these are explained by the principle that explains the rule. It is so almost everywhere in physical studies. 3. Most important of all, qualitative laws are converted into quantitative ones. It is the grandest characteristic of Nature—one to which we owe almost all our real knowledge of her secrets—that her deepest laws are mathematical. In chemistry especially the most intricate qualitative differences have almost magically been resolved into simple equations of quantity. Induction is thus helped in two ways: First, mathematical reasoning is far easier and less fallible than that of ordinary logic. Second, uniformities of quantity—of weight or distance—can be measured with the utmost minuteness; so that a single observation agreeing with a mathematical computation is of far more value than a hundred co-existences of mere quality.

Such, then, seems to me the inductive method, so far as so complex a theme can be outlined upon a page. The formation of a really universal proposition or law is like the building of an arch. On the one side is the repeated observation of particulars; but this by itself can give but the frail security of a general rule. On the other side is the reasoning through which the given proposition or law is connected with wider and simpler laws—a deductive process by itself most delusive. The one process shows a uniform co-existence; the other proves what this co-existence depends upon. Each apart is very weak; together they strengthen and support each other. The universal proposition or law is, of course, the key-stone of the arch. Such a proposition, built upon either process alone, would be like a stone in the air.

But it will be instantly objected that countless repetitions of experience, without exception, are sufficient by themselves to establish universal judgments. Is not the proposition, for instance, that all men are mortal, sufficiently established by the uniform experience of mankind? Does it gain any additional certainty by our knowledge of the conditions upon which the constant co-existence between humanity and mortality depends? Is it not equally certain to the savage who knows nothing of the necessitating causes? But remember that the savage ascribes it to *some cause*, if no other than arbitrary and supernatural agencies. And since he thus ascribes it to a variable cause, a shade of doubt steals over his belief in it as a fact. That all men are mortal, was not, for most people three centuries ago, a universal proposition in the scientific sense of the term. It was merely a general rule with well-accredited exceptions.

Science, also, has its empirical laws—uniformities of co-existence for which as yet no cause has been discovered. But no one doubts that there is a cause. And, until such a cause is demonstrated, no scientific mind would be surprised to find the empirical law failing him, even at the most critical juncture.

The question has been often and hopelessly debated among logicians why one or two repetitions of an observation are often of more value to the scientist than hundreds under other circumstances. That is readily explained by our doctrine of induction as the union of two processes, each strengthening and supporting the other. If we have become satisfied, deductively, that a certain coincidence *ought* to occur, we are satisfied with a few experimental proofs that it *does* occur; especially is this the case, for reasons given a moment ago, if the coincidence is one capable of exact quantitative measurement. But so far as the causes of the coincidence remain unknown, so much must the repetitions of experience be multiplied; and after all we have but an empirical law.

The fundamental principle of this essay, then, seems to me fully demonstrated in regard to that kind of thinking which is at once the most elaborate, the most splendid in its results, and the most difficult to understand—Induction. For, plainly, in this dual activity, Observation gives us *effects*, the relations or uniform co-existences of phenomena; the counter-process deals with the *cause* of these co-existences. The law, then, which prevails in the sim-

plest processes of thought prevails in the highest and most complicated: Induction is a synthesis of cause and effect.

Let us now briefly note the importance of this solution for the philosophy of science. The philosophic movement has heretofore been governed by one or the other of two equally one-sided tendencies of thought. On the one part was an empirical tendency laying all stress upon effects, and ignoring, so far as possible, their causes, finding in the Universe nothing but co-existences of phenomena; on the other part, an idealistic tendency with an intense zeal for causes, Universals, Laws; and a corresponding contempt for the observation of effects. And, if space permitted, it could be readily shown how the prevalence of one or the other of these tendencies brought to an untimely end the scientific movement in Greece, India, Alexandria, and in the Middle Ages. But modern science, with a practical, common-sense philosophy of its own, has always avoided both the empirical and the idealistic error, and fused together the good in each. Devoted to experience, it has not confined itself to a merely empirical tabulation of particulars; seeking unweariedly for the great laws upon which all phenomena depend, it has distrusted all deduction that outran observation and experiment. But science has done this instinctively, or rather through that practical common sense which always shuns extremes and one-sidedness, even when it does not understand them. So true is this that no theoretic exposition of the scientific method has heretofore been made that has proved generally acceptable to scientific workers. The value of the present exposition, therefore, is not merely that it answers a much-vexed question in logic, but that it presents the scientific method as a virtual embodiment of the true philosophy—a practical conciliation of the opposing, one-sided tendencies of speculative thought.

Mathematical Principles: Arithmetic. — How are universal judgments of this kind attained? Two things seem needful to be considered: 1. The starting-point of arithmetic is the formation of the general idea of units or ones. That idea of the unit is the most abstract of all concepts—that is, the simplest in its connotation and the most universal in its denotation. But, this idea having been gained, the rest of arithmetic is but a process of counting—that is, of noting the results attained by variously aggregating objects conceived as units and giving names to these results.

The different arithmetical rules are evidently but abbreviated processes of counting.

2. But now comes that problem which, in some shape or other, has caused so much perplexity in modern logic. This process of aggregating units and of noting results is a purely empirical one. How, then, do we attain to that universality and necessity which belong so pre-eminently to mathematical science? How can the results of a single process of counting be absolutely true for the universe and for eternity? I answer: That by hypothesis we have *excluded all possible cause of difference.* The units are invariable; the process of counting one by one is invariable; but, since all possible causes of a different result are excluded, a different result is absolutely unthinkable, from the very nature of thinking. A somewhat similar certainty is obtained through experiment, in chemistry for instance; but since, then, the exclusion of all possible causes of difference is not so absolutely assured, the necessity falls short of mathematical science.

Geometry.—The same solution is applicable to the disputes about geometrical "intuitions." Take one of the most familiar questions: How can I obtain, except intuitionally, the axiom that two straight lines cannot enclose a space? We have here the conception of two straight lines starting from one point; it is required to show that, even if prolonged to infinity, they can never touch again. Bare empirical inspection gives the rule that increase of prolongation produces or is the cause of increase of separation. But how do I know that this may not be changed somewhere in infinity, and the lines begin to approach each other? Simply because by hypothesis I have excluded all possible causes of change; and, therefore, from the very nature of thinking, the effect will continue unchanged through all eternity. Similarly with the other axioms. In fact, all geometry—if I may venture to define it in a single sentence—is but a laborious and infinitely skilful deduction of certain results that must follow from a continuous superimposition of equal lines, the absolute necessity of the conclusions being assured, because at every minute step we have excluded all possible causes of difference under infinite circumstances.

I utterly reject, then, the idealistic explanation of axioms as intuitions forced upon us by some mysterious and arbitrary com-

pulsion. I also reject all empirical explanations like that so laboriously argued by Mill—that vision, either actual or *imaginary*, can explore infinite space and tell us what will happen at any point therein. Besides its inherent absurdity, this is contradicted by the fact that our belief in an axiom once understood is given us in a flash—not permitting of any such infinite scrutiny of space. This instantaneousness of belief is indeed the stronghold of the intuitional theory, but it is equally well explained by our own principle. We directly perceive the empirical fact; the absolute certainty of it is given us by the very nature of thought, and therefore instantaneously upon the bare condition of thinking about it. Whatever depends directly upon the nature of thinking demands no mediate process and no time.

Intuitions.—Let it be noted that this doctrine does not merely reduce all the so-called intuitions to one—that of cause and effect. That, by itself, would indeed be a service of value, since it would introduce into the intuitional philosophy unity instead of its present incoherence. But our doctrine goes much farther than this. It does not present the relation of cause and effect as something in which the mind is mysteriously—or intuitionally—compelled to believe, for that leaves always open the abyss of absolute skepticism—the question whether there may not be some other transcendent kind of intelligence not under this compulsion. We say simply that to think is to relate cause and effect; and there can be *no kind* of thinking that is not thinking.

Chapter V.

Nature.

What light now does the doctrine of this essay throw upon the principles underlying our present knowledge of Nature? The question can be answered here evidently only in the briefest, most fragmentary way.

Atoms.—Just here we encounter the shadows of a very ancient controversy. On the one side is the common theory of atoms; on the other the theory of Boscovich, Faraday, and a few other eminent men of science—that an atom is nothing more than a focus of converging forces. Let us remember that the work of science is here purely one of explanation. As we have seen at the close

of Chapter II, the absolute certainty is that of Objective Causality; the task of reasoned or scientific experience is to explain, so far as possible, the character of that causality. The common theory affirms atoms or substances as at least a part of this causality; the other conceives the atom merely as an effect—a resultant of forces. The latter theory does not seem to me utterly incredible or as playing such havoc with reality as did the *a priori* speculations of the old objective idealism; but still the first, I think, gives the only satisfactory explanation of all the facts—especially those of time. We must regard the atom, not merely as an effect of forces, but as a permanent cause producing upon us in its aggregations the effect or sensation of extension.

Outside of this controversy the tendency of scientific experience is very clear. Science has left to the atom only its one fixed property of extension, its power of occupying space; to that extent it is an independent cause exerting a sensible effect. All else is being resolved into forms of motion. Qualitative relations are being transformed into quantitative ones, and, instead of occult qualities or potencies inherent in bodies, we have motions produced by forces.

Forces.—The full significance of this scientific revolution is being hidden from many minds by two causes. The first cause is a one-sided, empirical bent of mind, that eclipses the causal element in all thinking. Comte is the purest type of this tendency. Science for such thinkers is but a registry of observations concerning the successions and co-existences of phenomena. Forces, causes, are merely products of the irresistible tendency to personify "abstractions"; they are pure creations of the intellect, sometimes useful, perhaps, but utterly fictitious. I need not repeat against this the now familiar argument founded upon the nature of thought. I wish here only to note the cumulative force of that argument.

The scientific skeptic of an empirical bent uses this objection to abolish forces; he will have only moving bodies. But the idealistic skeptic comes with the same objection to annul the idea of bodies; he will have nothing but a perceiving mind and its states. And after him the absolute skeptic, with the same objection annulling mind as well as matter—leaving nothing but percipient states where nothing is perceived and there is no one to perceive it. But by the aid of a single argument we ascend step by step

from this abyss. We regain, first, the idea of a percipient mind; then the idea of objective existence; then the scientific division between forces and their effects. In other words, the different forms of skepticism are absolutely interdependent, springing from a common cause. It is the failure to perceive this connection which gives to each form its attractiveness to particular orders of mind. No skeptic—especially the scientific one—wishes to accept all these forms of denial, and never really does; and still he *must*, if he carries his denial to its logical conclusions.

The second cause is a survival of mediæval realism. Through this tendency, as we have seen in Chapter III, the word "law" has come to play so misleading a part in modern thought. How many people, for instance, conceive of the heavenly motions as somehow produced by "the law of gravitation"? But this is scholastic realism—the arrest of thought by a word. A law is but a mathematical formula for uniform movements. The force or cause producing these movements—according to a rigid mathematical formula—is still to be sought.

But the most common and the most misleading form of scholastic realism in modern times is, essentially, a vague belief in occult qualities or mystic forces hidden within bodies, with this difference, however, from the mediæval form of the belief. The changes of a body are no longer conceived as produced by occult qualities resident within the body itself, but by *occult qualities resident in some other body* or *bodies*. The gravitating movements, for instance, of a body are conceived as produced not, as in the Middle Ages, by some occult quality of *weight* within the body, but by some occult quality of *attraction* inherent in other bodies. This modern form of realism is even more absurd than the ancient. Conceive all that it implies: First, that each atom acts not merely upon some other atom, but upon all the atoms of the universe; second, that these infinite activities of the atom go on absolutely unchanged either through vacant space or through the densest medium, no intervention of other bodies affecting the influence of gravitation; third, that each of these infinite activities of the atom is carried on according to a mathematical law, very simple, indeed, in its expression, but so infinitely intricate in its execution that the highest human art could not produce such a movement between even two bodies—that is, a movement each instant varying inverse-

ly to the square of the distance. What superstition of the Middle Ages, then, equals this of imagining within an atom an occult quality capable of producing an infinite number of such activities?

Such, then, are the two great errors now obscuring the clearness and accuracy of scientific conception. On the one side is the empirical tendency obscuring—so far as possible—all idea of causality, seeking to look upon effects as produced by nothing. On the other side is a scholastic realism wherein thought is arrested by abstract words; or, more definitely, a failure to see that all such terms as "laws," "forces," etc., are but provisional formulas expressing the action of Infinite Causality. True science steers between these rocks. It does not attempt the impossible task of conceiving motions without forces; nor, on the other hand, does it look upon its forces and laws as anything more than formulas—sufficient, indeed, for scientific purposes—but still merely formulating the action of a Causality that lies beyond the narrow bounds of physical research.

And in this shape physical science hands over the problem of the physical universe to philosophy: A vast complex of interconnected movements produced by a Cause acting according to mathematical formulas, very simple in idea, but infinitely intricate in execution.

Antecedent and Consequent.—Everything here starts from Hume's epoch-making paradox resolving all causation into mere uniform sequence between antecedent and consequent. Paradoxical and false as Hume's statement is, it yet contains an element of deep truth, endorsed by science and fully recognized by the doctrine of this essay.

Speaking with scientific exactitude, no two physical phenomena stand to each other as cause and effect, but only as two terms in a fixed series—as antecedent and consequent in a vast and intricate process of effectuation. Between the antecedent and consequent, obscure processes intervene, some of which we see clearly enough to make us suspect the existence of many more quite insensible to us. Even so seemingly simple an act as sensation we know to be wonderfully complex—determined not only by the external stimuli and subtle conditions of our own organism, but by the influences of other concurrent sensations, and even by inferences of reason. So everywhere we find not a cause, but a process—a dimly dis-

cerned series of effects, each term of which is interconnected with the rest.

The simplest of all such processes is that of motion imparted through mechanical impact. But even here the first body is but the medium of transmission; what it received, it imparts; and in this transmission the quantity of motion is exactly conserved without loss or gain. Only in a crude sense can the first body be called the cause of motion in the second; both are but terms in a never-ending series of movements. And so in all physical relations, the antecedent is but the medium through which motion is passed on to the next term in the series.

That is the truth in Hume's paradox. The false and paradoxical part arose from assuming that the doctrine of causation was thereby annulled. The true cause is not the invariable antecedent to a consequent, but that which causes their uniform and invariable connection. In the progress of induction, Causality does not vanish; we merely throw off our first crude conceptions of it. Its first aspect of multiplicity and variation gives way to an aspect of unity and permanence. All physical phenomena finally present themselves as a vast and infinitely intricate system of effects, related to a cause producing the fixed and absolute order of the parts.

Two cautions should be noted. First, the above is qualified by what was said at the beginning of the chapter concerning atoms. If the atom is to be regarded not merely as an effect of force, but as occupying a fixed extent of space, it is *to that extent* a true cause. Secondly, this doctrine involves no war against the usages of common language. We properly enough speak of an antecedent and a consequent, in a causally connected series, as cause and effect. Still no argumentation can break down the truth in Hume's doctrine. One physical event is not the cause, but the antecedent of another; and, the better we remember this, the clearer and truer will be our view of the physical universe.

Chapter VI.

The Conscious Cause.

Physical existence, then, is a vast series of interconnected effects, the more vivid terms in which appear as antecedents and

consequents. Many, charmed by this induction, have endeavored to extend it also over the field of mental existence. Mental states, they argue, are nothing more than antecedents and consequents connected in a fixed, although dimly discerned, order. That evidently is to contradict the direct testimony of self-consciousness which exists, as we have seen, solely to affirm Self as the producing and controlling cause of its own activities. But those who have clung to this testimony of consciousness have done very little to weaken the array of argument upon the other side; they have been generally inclined to admit that the witness of self-consciousness and the inductions of experience directly contradict each other. Philosophy has failed to solve this seeming contradiction. And to this failure, more than to anything else, is probably due its present disgrace.

It may seem an absurd audacity to attempt to answer within these limits a host of arguments that have been regarded as virtually unanswerable even by most of those who have denied their conclusions. But the whole previous discussion is a preparation for this task. From our present point of view this seeming contradiction between self-consciousness and reason is readily solved. It seems to rest mainly upon four fallacies.

First, The Fallacy of Inconceivability.—"That the mind," says Sir William Hamilton, "should produce or originate its own states is inconceivable; and even to conceive the possibility of this inconceivable act we must suppose some cause by which the man is determined to exert it." But why inconceivable? Why cannot the mind rest in the conviction that itself has produced its own acts without supposing some cause for its own causality, and so on in infinite regress? The ground of the fallacy seems to be a vague generalization that reason demands a cause for everything. But the doctrine of this essay has dispelled that illusion. The office, nay, the very nature, of thought is to relate cause and effect. Looking upon the sum-total of existence, it asks what is cause and what is effect. Having discovered certain phenomena to be effects—mostly through the invariable uniformity of their sequences—it is entirely content to relate those effects to their cause. Having discovered a cause, it is equally content to relate that cause to its effects. In the physical field we indeed seek for the causes of *what are called causes*, for we have found them not

to be real causes, but merely antecedents—terms in a series of connected effects. But to demand a cause for a true cause is to contradict the very nature of thought. It is the insanity of reason.

Jonathan Edwards was here more acute than his successors. He does not pronounce it utterly inconceivable that the Self should be the cause of its own volitions. But he adds that this may explain why the soul acts at all, but not why it acts in a particular manner. It is inconceivable to him "that the same cause in the same circumstances should produce different effects at different times." But this inconceivability belongs to the physical field; it is mere bias when carried over into the mental. It is indeed inconceivable that one physical antecedent under the same circumstances should be followed indifferently by one or the other of two consequents; that a billiard-ball, for instance, should, under the same circumstances, impart a variable quantity of motion to another ball. Why? Because, as we have seen in the previous chapter, the billiard-ball is only nominally a cause; it merely imparts what it has received; it is simply a medium into which a fixed quantity of motion is received and transmitted or else distributed among its own parts. But to carry this over into the mental field is to beg the whole question. It is to take for granted the very thing to be proved: that the conscious Self is not a true cause, but simply an effect of something beyond itself—a mere medium through which impulses pass as from one billiard-ball to another. And this assumption is made in blank contradiction of a self-consciousness testifying to all men and always that the Self *is* the cause of its own mental states.

Designedly I have placed this fallacy of inconceivability at the head of the list. It is the first, the most insidious, the one to which the necessitarian always retreats in every stress of argument. No progress whatsoever can be made in the discussion unless we understand the origin of this fallacy. It is a bias brought over from physical studies. Reason does not demand a cause for a cause, and so on in infinite regress. Nor does it demand that a cause under the same external conditions should always act in the same manner. That necessity does indeed belong to all physical antecedents, *as we have inductively learned.* But to impose it, without proof, upon our mental acts, is an absolute begging of the question.

Second, The Fallacy of Motives.—The necessitarian argument here is well known; we need only the answer, and to gain that answer we must thoroughly comprehend what a motive really is. A motive is an anticipation of pain or pleasure, forming an inducement to act. Whatever thus presents itself as pain or pleasure—even in the most ideal and distant anticipations of eternity—is a motive. Nor can it be denied that in the most of our actions we are governed—almost mechanically determined—by these motives. Since our mental life is carried on in a physical environment, we are for the most part creatures of habit and inclination. To that extent we act as other animals; we are moved by the strongest impulse, like billiard-balls.

But along with this ordinary action there always goes the testimony of self consciousness testifying to the Self as cause. Thus, I know that I have the power of controlling instead of being controlled. I can, if necessary, push entirely aside all considerations of pain or pleasure, even the most ideal and remote. In other words, I have the power of *acting solely according to my knowledge of what ought to be done.* This is freedom: the Self determining its own activities according to its knowledge of right and wrong.

But this knowledge, it will be objected, is the antecedent conditioning the act. No! I answer, evidently not, for in every moral action *this knowledge is always present*, whether I act according to it or not.

But, again urges the fatalist, I do not act according to this knowledge unless I wish or desire to; the wish or desire is the antecedent. (See Mill's "Examination of Hamilton's Philosophy," ii, 285, and "Logic," 524.) But this is merely a verbal artifice or bewilderment. A wish or a desire is an inchoate volition; it refers to certain conditions of constraint or inability. But in this case I know that I have the power, at least, to will according to my knowledge of right and wrong. To say, then, that I have not the power to will unless I wish to, is pure nonsense. It is merely to say that I have not the power to will unless I will.

I do not mean that these verbal artifices are designed. They are rather the spontaneous results of that feeling of inconceivability already described. The necessitarian carries over such a bias from the physical field that he can hardly help thinking that there

must be some antecedent determining every activity even of a free cause. Hence he bewilders himself with a verbal artifice, in which the volition itself, under a different name, is made to play the *rôle* of antecedent to itself.

Third, The Fallacy of Spontaneity.—"It is impossible," says Hamilton, "to see how a cause undetermined by any motive can be a rational, moral, or accountable cause." "A motiveless act is, morally and rationally, worthless."

That proceeds from the assumption that there is no middle ground between action controlled by motives of pleasure or pain and action under the influence of unconscious spontaneity. But we have seen that there is such a middle ground, and that very much higher, morally, than either of them. The perfect type of moral freedom is in an act not done from considerations of pain or pleasure, or through unconscious spontaneity, but done solely because we knew that it ought to be done.

But is there, then, no freedom in a wrong act? Yes, to the extent that every such act is accompanied by a knowledge of what ought to be done and a consciousness of power to act according to that knowledge.

Fourth, The Fallacy of Prediction.—"The statistics of crime," asserts Mill, somewhat too vigorously, "show results that are as uniform, and may be as accurately foretold, as in any physical inquiries in which the effect depends upon a multiplicity of causes." I answer that these tables of crime are statistics of what *does* very largely depend upon physical causes or antecedents. The criminal classes are mostly composed of those in whom, through such purely physical influences as heredity and environment, the power of free moral activity has been reduced nearly to zero. True, except in cases of criminal insanity, the consciousness of this power is always present. But it is a power so rarely exercised as to form but a slight factor in the statistics of crime.

A similar answer applies to the argument that we can often roughly predict a man's conduct from our knowledge of his character or moral habits. Habit is truly said to be a second nature, often almost as fixed and rigid as a physical nature. It is not strange, then, that we can often predict conduct. But let us remember that distinction, the overlooking of which has heretofore so confused the question of moral freedom. Although our con-

duct is so generally governed by predispositions and other motivities acting in a purely mechanical way, still we are always conscious of a power to break loose from this constraint and to act solely from our knowledge of what ought to be done. That we so rarely exercise this power is a very poor reason for denying that we possess it.

These fallacies cleared away, the testimony of consciousness stands forth, evident and absolutely unimpeachable. Self-consciousness exists solely to affirm the self as cause. And, since a cause, therefore free.

The Infinite Cause.—That the First Cause of all things is free is now evident. For, if it were not free, it would be merely an effect for which thought, from its very nature, would still demand a cause. But the constant and reasoned experience of mankind has shown that this causality acts always according to fixed laws of mathematical exactitude. Therefore the Cause of all things is consciously intelligent, for it is demonstratively impossible for anything to act *freely* according to a fixed law without knowing the law according to which it acts.

The clearness of this demonstration may be obscured by a prepossession gained in the study of human life. We see the caprice and fickleness of human actions; we believe man to be free; and so we naturally come to confound the idea of freedom with that of mere spontaneity acting without reason, arbitrarily and at random. But the explanations of the present chapter ought to dispel that illusion. The appearance of chaos and arbitrariness in human actions is due to the *imperfect and partial* character of our freedom. In ordinary human life we are conscious of a free power, but rarely use it; our conduct is, for the most part, the product of complicated impulses, made still more complicated and much darker by this overshadowing sense of a freedom so rarely used. But *perfect* freedom would not have this appearance of arbitrariness, of mere blind unreasoning spontaneity. It would consist, as we have seen, in always acting according to a law of right, self-imposed indeed, but otherwise as rigid as the law of the heavenly movements. In other words, the essence of freedom is to act according to a self-imposed law. Therefore, the absolute order of the universe is necessarily involved in the perfect freedom and infinite intelligence of its Cause.

Final Causes.—While the doctrine of final causes has been and still is very useful in the practical culture of the religious emotions, its philosophic value is extremely limited. And that chiefly for two reasons: 1. The doctrine is wholly based upon reasoning from analogy—a reasoning logically defective and always perilous, especially when applied to subjects so disparate as the finite and the infinite. We have just seen how analogies from human life have served, perhaps more than anything else, to obscure the conception of Infinite Freedom as the cause of the absolute order of the universe. 2. It intensifies the wretched rivalry of Science and Religion. The aim of science is to demonstrate the reign of law, to evolve all phenomena from natural processes—exceedingly simple in idea although infinitely intricate in execution. To science, therefore, the doctrine of final causes is an unwelcome intrusion; it seems an attempt to substitute the theological method of analogy for the method of induction. Above all, it seems an insidious attempt to build a belief upon the failure rather than upon the successes of science.

But here is a principle that fully guarantees the conclusions toward which the doctrine of final causes has dubiously struggled. It is at the same time a principle in entire harmony with the spirit and expectations of science. The more that science succeeds in explaining the universe as a process carried on according to invariable law, the more perfect the demonstration of a First Cause absolute in freedom and infinite in intelligence.

Chapter VII.

Comparative Philosophy.

We have thus concluded our survey. Every process of thought from the lowest to the highest—every simple perception, or concept, or judgment, or act of reasoning, or so-called intuition—has been shown to be essentially a relating, in a more or less complicated form, of cause and effect. Thus our work might seem to be virtually ended. But it can be still further perfected by the aid of the historic method—that is, by a comparison of the different philosophic systems that have prevailed in the past.

The grand division of philosophic systems, as sensationalistic or idealistic, is well known. And we have already shown how this

division grounds itself upon the relative stress put upon one or the other of the two antithetical elements of all thought, cause or effect. This difference of stress explains the philosophies of the past, their relative merits and defects, their constant conflicts and common failure.

The chief service of the sensationalistic philosophy has been its steady affirmation of experience as the sole source of knowledge. Its well-taught lesson to the world has been that we must begin with the study of effects; that all *a priori* generalization of causes is worse than useless. But, beyond this contribution to the scientific method, sensationalism has accomplished nothing. Lacking an insight into the nature of thought, it has seen in experience nothing but an automatic registry of sensations. Its sole principle of association cannot interpret anything beyond the psychology, so to speak, of animals; for, undoubtedly, the sensations of the animals are thus linked according to the laws of Hartley, Mill, and Bain. But only when these sensations are related as effects to these causes does real thought begin. Failing to grasp this distinction, sensationalism has interpreted the cerebration of the animal, but not the processes of real thinking.

The chief vice of idealism, on the other hand, has been its method—that of intuition and *a priori* generalization. Experience—not yet understood as the relating of all phenomena in a synthesis of cause and effect—seemed to give no guarantee for the most universal and necessary beliefs of mankind. Thus the idealist was driven to invent the intuitional method, a mysterious process by which the mind gained immediate and instinctive knowledge of what lay beyond experience. That method we now know to be an illusion. It contradicts the fundamental law that all knowledge is mediate, no effects being known save as they are related to causes, and no causes save through their effects. It renders impossible the unity which philosophy exists to seek. Once admit a source of knowledge beyond experience, and you have a mere chaos of instinctive beliefs to be multiplied at pleasure.

But, despite its method; idealism has been of the greatest service to human thought. It provided, at least, a temporary basis for the fundamental truths of religion, morality, art, and even mathematical science—truths which lie enfolded in the very nature of experience, but for which experience, imperfectly understood,

seemed to furnish no assurance. To this pass, then, philosophy was driven. On the one side was a sensationalistic school standing by the true method, but one imperfectly understood, and therefore useless for the attainment of the highest truths. On the other, an idealistic school anticipating truth, but by a false method, or, more strictly, without any method at all. The explanation is the one-sidedness of both systems; their defects were mutually complementary, because each clung to an element in the dual process of thought which the other tended to ignore.

So far our comparison of philosophic systems has been merely in outline. But with Kant a great revolution began, that we must consider more in detail.

What was Kant's real contribution to philosophy? That question has been discussed for nearly a century; many different answers have been given, and still the question does not seem to be settled. This indefinableness of the movement seems to hint at a mere ferment of opinion, the natural outcome of a revolutionary age. But that the movement was something more than ferment is proved by its persistence; even now many are demanding that philosophy, after its long wanderings, should "go back to Kant." What, then, is the secret of this influence, so great and yet so difficult to define? I answer that Kant was the first to propound the true problem of philosophy. That problem is: The Nature of Thought.

Before Kant, philosophy had been chiefly an attempt to classify the products of thinking. But evidently all such classification could be only arbitrary and subject to endless disputes; it was a mere culling from the maze of mental phenomena of what suited a particular system, sensationalistic or idealistic. Kant saw that, before we could classify to any purpose such complex products as those of thought, we must come to some understanding of the process which produces the products. Let me first know, for instance, what conscious experience is; after that I can better decide whether a given idea is to be classed under products of experience or of some mystic *a priori* power of intuition.[1] Kant, then, propounded the supreme question of philosophy; somewhat obscurely, indeed, but

[1] Prof. Adamson, the ablest English interpreter of German philosophy, in his book upon Fichte, reaches precisely the same conclusion as that here outlined concerning the nature of Kant's real contribution to philosophy. This testimony is the more notable, since Prof. Adamson has no theory to support.

still clearly enough to make it henceforth the focus of all wise speculative research. That was honor enough for one man. It was not given him to answer the question he had propounded. It was impossible for him to work himself clear all at once from the bewilderment and prepossessions of the old methods.

Besides, the specially mathematical bent of Kant's genius led him to a one-sided view of the problem. With great sagacity Hume had converged his whole skeptical attack upon the conception of causality, foreseeing that by this philosophy was to stand or fall. But Kant expressly described this as a blunder on the part of Hume; and he himself started off into what has proved an interminable and entirely profitless discussion of the alleged mathematical *a priorities*. By not keeping to Hume's lead, he lost the key to the philosophic problem. Hence that air of vagueness and paradox in the "Critique"; the amazing complexity of its details, the imperfect juncture and even contradiction of its parts, the lack of a unifying principle, which have made it so much of a riddle to modern thought.

Fichte, Schelling, and Hegel.—It is the fashion now to look somewhat disdainfully upon this great triumvirate, and even to doubt whether they were, in any good sense, continuators of Kant. But very plainly they were. They not only kept to Kant's problem, but they carried it nearer to a solution than he had been able to do. They brought to the light one element, at least, of the solution; and an element that has been of the greatest service to modern thought.

No one can look very closely into the workings of thought without being more or less impressed by the aspect of dualism everywhere presented. Kant not only recognized this in his fundamental distinctions between theoretic and practical reason, the matter and form of thought, etc., but also in his doctrine of the categories gives an express hint of a possible synthesis of these antithetical elements. He notes that "the third category of each class results from a combination of the first and second categories of the same class"; and expressly calls this fact "a challenge to reflection."

Fichte took up this challenge. His whole survey of consciousness is guided by the idea that the process of thinking is a synthesis between two antithetical elements. But Fichte did not ex-

tend his survey much beyond the perceptive states of thinking. Hegel, following Schelling, found this same aspect of dualism in the higher forms of thought—concepts and propositions; and he attempted to construct out of it a law governing the whole universe of phenomena. The service thus rendered to modern development it is mere bigotry to ignore. It has given birth to the most characteristic trait of the nineteenth century—the habit of seeking for the element of truth contained in each of two conflicting systems of thought. It has taught us to see in art, theology, language, and philosophy an ever-unfolding movement, always oscillating from one extreme to the other, but still always approaching nearer to final truth; in a word, it has substituted the historic for the dogmatic method in all studies pertaining to the human mind. Thanks to the Post-Kantian philosophy of Germany, there are no longer any systems of pure idealism or pure materialism, but a gradual coalescence of the two tendencies, very confused at present, but still giving promise of future harmony.

But the Post-Kantian philosophy did not get beyond a merely *empirical* discovery that thought was a synthesis of thesis and antithesis. It entirely failed to grasp the law of this synthesis. Fichte started from the purely formal and—as we have seen in Chapter I—misleading antithesis between subject and object; and his attempt to deduce all mental processes from this principle led through a wonderful maze of subtilities, only to paradox at last. His successors clung to the same starting-point, and thus gained a conception of the universe not essentially different from that of Spinoza. Hegel, indeed, used to boast that he had replaced the Spinozistic idea of the absolute Substance by that of Spirit or subject; but in reality the difference is not so great as he supposed. Both the category of substance and that of subject are merely derivative; substance is but one way of conceiving the cause of certain effects; the subject is that which is conscious of itself as the cause of its mental states. Only when we rise from these derivative categories to one that includes them both and much more besides—the primitive all-embracing category of cause and effect—do we gain a genuine theism.

Kant claimed for himself in philosophy the rôle of Copernicus in astronomy, and with right. By propounding the true philo-

sophic problem he reversed the entire order of speculation, and taught men to seek in the nature of human consciousness for the key to all the ancient controversies. Not content with this, however, Kant also hinted at a possible parallel between his own labors and those of Newton. But evidently neither he nor his continuators reached that high place; a vast array of logical subtilities, a mere construction of scholastic refinements, always labored and sometimes confused and contradictory, is something very different from the simplicity and clearness of a Newtonian induction. And yet philosophy, which is but the final induction —the grasping of all the results of experience under one unifying principle—ought, above all else, to be simple and clear.

The Philosophy of Common Sense.—This philosophy, so highly esteemed in Scotland and England, is to a certain extent justified from our present point of view. The great systems of speculation we have found to be the products of a one-sided tendency; they have put too exclusive an emphasis upon one or the other of the two antithetical elements of thought. There is a kind of theoretic insanity about them; method, but not balance. Common sense, on the contrary, is mental health; it is the natural equipoise which the mind maintains when not disturbed by speculative extravagance. *Therefore*, the conclusions of a perfect philosophy ought to be in harmony with those of common sense. But that is something very different from saying that philosophy is but a somewhat pretentious form of common sense—a mere registry of truths for which there is no ground of assurance save the general belief of mankind. Common sense has, in fact, no philosophy. It has only certain roughly balanced anticipations of the truth, with which the reasoned conclusions of philosophy ought, for the most part, to coincide.

Agnosticism.—Even in this there is an element of deep truth. One of the most fundamental principles of this essay has been that neither of the two antithetical elements of thought is, *by itself*, an object of true knowledge. Either cause or effect without its correlate is unknowable. Thus, in the simplest act of external perception, we know the cause—the object—only through its effects; conversely, the effect—the sensation—is a process for the most part inscrutable, going on in the deepest darkness. A clear, distinct object of knowledge only emerges from a synthesis of these

two elements, each unknowable by itself. And so everywhere. That, in fact, is the true doctrine of the relativity of knowledge; nothing known except relatively to something else—except in the relation of cause and effect.

The fatal error of agnosticism consists in seeing only one half of this truth. From Kant downward it has always assumed that phenomena—effects by themselves—were fully known; but that causes—especially the conscious self and the Infinite Cause—lay wholly beyond the limits of knowledge. We have followed this assertion through all the processes of thought, and we now know it to be altogether arbitrary and one-sided. The true law of nescience is wider but less baleful than this. The Infinite Cause, the whole universe of effects—each of these is equally unknowable out of relation to the other. But human progress has always consisted, and ever will consist, in an advancing knowledge of both, through their mutual relation.

CRITIQUE OF KANTIAN PHILOSOPHY.[1]

TRANSLATED FROM THE GERMAN OF PROF. DR. KUNO FISCHER, BY W. S. HOUGH.

CHAPTER I.

The Kantian Philosophy as Doctrine of Knowledge.

In order to undertake a criticism of the Kantian philosophy, it will be necessary, first of all, to review briefly its fundamental principles, and allow every distorted or false view which would destroy the conception of the system to give place to the accurate and true one. For one can only justly criticise what one has

[1] It should perhaps be mentioned that this "Critique," as well as being published separately under the above title ("Kritik der Kantischen Philosophie," Munich, Fr. Bassermann, 1883), also appears in Vol. V of Kuno Fischer's "Geschichte der neuern Philosophie," as an "Introduction to the History of Post-Kantian Philosophy," it being a brief *résumé* of the two preceding expository volumes on Kant, together with the author's criticism of the Kantian doctrines. It is, then, strictly speaking, a Critical Exposition. In quoting from Kant, Prof. Fischer has made use of Hartenstein's *first* edition. (Leipzig, Leop. Voss, 1838.)—TR.

rightly understood. And from a critical knowledge of the system there follows the establishment of those new problems contained in it which determine the course of the development of post-Kantian philosophy. We shall proceed, therefore, from the characterization of the Kantian doctrines to their criticism, and then deduce the problems which have led to their transformation and development.

The Kantian philosophy in its entirety is seen to unite in itself, if we keep the main point in view, three fundamental features, which must be rightly conceived and rightly combined if we are to appreciate the full peculiarity of the nature of this philosophy which swayed the last century: they are *Doctrine of Knowledge*, *Doctrine of Freedom*, and *Doctrine of Development.* Its new doctrine of knowledge conditions its new doctrine of freedom, and both condition its new doctrine of development. These themes are arranged in the order in which they follow one another in the course of the critical investigation.

The first problem, and that which determines all the fundamental questions of the Kantian inquiry, is concerned with the origin of human knowledge. There is no simpler expression with which to designate Kant's ground-problem, and at the same time the criterion which guided him in its solution, and which furnishes us the best means of keeping our bearings in reference to the nature and method of his system. That *this* problem was never fairly recognized, not to say solved, before Kant, we have shown sufficiently in detail in our characterization of the epoch of Critical philosophy and the pre-Kantian standpoints to be able to refer the reader to that earlier discussion.[1]

I. THE DOCTRINE OF PHENOMENA.—TRANSCENDENTAL IDEALISM.

1. *The Origin of Phenomena.*

If light is to be thrown upon the origin of human knowledge, those conditions must be investigated which precede it, which, consequently, must be contained in the faculties of our intellectual nature, but which are not yet knowledge itself. The philosophers before Kant, some with full intention, others with complete self-deception, presupposed these conditions, and thus treated the ex-

[1] Vid. Fischer: "Geschichte der neuern Philosophie," vol. iii, pp. 3–38.

planation of human knowledge dogmatically. They consequently failed of the solution, and in the very matter of importance attained nothing. Hence the problem had to be reformed, and so taken that the factors or conditions of knowledge were sought by a new investigation of human reason along that path which Kant called *critical* or *transcendental.* Knowledge is unexplained as long as its origin remains obscure. This obvious proposition is valid not only in reference to knowledge, but also in reference to every object of knowledge; for to know an object means as much as to understand its origination. Hence there can be no talk about a knowledge of objects as long as their origin remains unknown. The inquiry concerning the origin of human knowledge necessarily coincides, therefore, with that concerning the origin of our *objects of knowledge*, or of things knowable to us. All our objects of knowledge are, and must be, *phenomena*, which we represent to ourselves in thought; nor does it here come immediately at all into question whether the nature of things reveals itself in phenomena adequately or inadequately, or not at all. The inquiry concerning the origin of our objects of knowledge is accordingly identical with that concerning the origin of phenomena, or of the phenomenal world—*i. e.*, that body of phenomena which appear to the human reason as such, or which we all conceive and experience in a common way. The content of these phenomena is our *world of sense.* That we have and conceive such a common world of sense may be regarded as an established and uncontroverted fact; and this common world would be impossible if we were not compelled to conceive things in a common manner, or according to the same laws. The inquiry concerning the origin of human knowledge is thus seen, as soon as it is taken up seriously and thoroughly, to involve the inquiry concerning the origin of the sense-world, or of that idea of the world common to us all. The problem of knowledge cannot be reformed, and the conditions involved in its process investigated, without stating the question in the manner just developed. Just as we can rightly contemplate the world of stars only after we have won that point of view from which the situation and motion of our own earth become apparent, so we can rightly apprehend and estimate the world of sense only when we have attained an insight into the standpoint and activity of our knowing reason. The *Critical* or *Transcend-*

ental point of view in philosophy corresponds to the *Copernican* in astronomy.

If we ourselves create an object, its origination is as intelligible to us as our own activity, and the object itself is consequently completely knowable. If, on the other hand, there is that contained in the object which has and retains the character of something *given*, something which we cannot produce, or which cannot be reduced to our creative activity, then our knowledge will come at this point upon an impenetrable barrier. The objects of our knowledge are, therefore, just as far completely knowable as they are our *products—i. e.*, just as far as we are capable of creating them and of making the process of this creation clear to our consciousness; *only* so far does the knowableness of things extend. Accordingly, the inquiry concerning the origin of our knowledge and its objects, the sum-total of which constitutes our common world of sense, is more exactly to be taken, so that under the term "origin" shall be understood *creation* by the factors or capacities of our reason. If our sense-world is the product of our reason, it is also the completely intelligible object of our reason; it is this object *only as far* as it is this product. "For one thoroughly comprehends only what one can himself completely produce according to notions." [1]

2. *The Ideality of Phenomena.*

Now, Kant has shown that there is *an element* in all our phenomena which has and retains the character of something given—namely, our *impressions* or sensations. These, however, as such, are not yet objects or phenomena, but only the material out of which objects and phenomena arise in accordance with the laws of our thought, or through the form-giving power of our perception and understanding. Thus the sense-world originates from the material of our impressions, which are so moulded and combined, in accordance with the necessary and involuntarily fulfilled laws of our thought, that we all conceive the same natural order of things. The laws of thought are the ground-forms of perception and understanding—space, time, and the categories. The involuntary or unconscious fulfilment of these laws takes place through

[1] Kant: "Kritik der Urtheilskraft," ¶ 68. ("Werke," vol. vi, p. 258.) Cf. Fischer: "Geschichte der neuern Philosophie," vol. iv, p. 483.

the imagination, while the knowledge of them is a matter of critical inquiry.

Since the laws of thought make phenomena and experience, they must precede the latter, and are, therefore, not given empirically and *a posteriori*, but *a priori*, or transcendentally; they are the forms, the sensations, on the contrary, the stuff or matter of all phenomena. This matter is received by our reason; it is given to it, not produced by it; therefore it is not *a priori*, but *a posteriori*. Yet one may not say that our impressions are given *a posteriori or empirically*. This inexact and incorrect expression utterly confounds the Kantian doctrine. What we draw from experience, or what is given by experience—this is *a posteriori or empirical*. Kant expressly teaches: "That which is borrowed merely from experience is known only *a posteriori* or empirically."[1] Now, it appears that since impressions constitute the matter of all phenomena and experience, they belong to the conditions and elements of experience, hence are contained in it, but not produced by it; they do not result from experience, but experience from them. That is empirical which is given to us through experience. Now, sensations are the material of experience, and are, therefore, given for it, not produced by it. Kant explicitly says: "Perception which is related to an object through sensation is *empirical*."[2] An empirical object presupposes sensation. Although this relation is self-evident, it is still very necessary to enforce a correct conception of it, since one is countless times obliged to read: Kant taught that the form of our knowledge is given *a priori*, the matter *a posteriori* or empirically. If so, Kant must have contradictorily taught that the matter *for* experience is given *by* experience! Then he has not explained experience, but, like his predecessors, presupposed it; then the ground of sensations must be sought in experience; then the thing-in-itself lies hidden in phenomena; then the Kantian philosophy is completely inverted and stands head downward.

Since our sense-world consists only in phenomena, it is throughout *phenomenal*. Since the matter of all phenomena consists in sensations, their form in perceptions and notions, the elements of the same are through and through subjective; their material and

[1] Kant: "Kritik der reinen Vernunft." Introd., III, note. ("Werke," vol. ii, p. 39.)
[2] Id., "Transcd. Æsth.," ¶ 1 (p. 59, *et seq.*).

formal constituents are contained in our knowing reason, and have the character of ideas[1] (the word is taken in the broadest sense). Hence all our phenomena are ideas; they consist in being mentally represented, and are throughout *ideal.* This doctrine of the ideality of all phenomena, and of their origination from our sense-states and forms of reason, is called *Transcendental Idealism.*

All phenomena are in time; the external are also in space. If they contained anything which was independent of our ideas, and which was nevertheless in space and time, the latter could not be the ground-forms of our ideas, hence not pure perceptions. Since, now, space and time are pure perceptions and nothing real in themselves, everything in space and time must be through and through ideal. The being of all objects in space and time consists in their being mentally represented. From the Kantian doctrine of space and time there follows, therefore, the doctrine of the ideality of all phenomena: the "Transcendental Æsthetic" founds that transcendental idealism which characterizes Kant's entire doctrine of knowledge.

Because space and time are the forms of perception of our reason, the pure space-and-time-magnitudes, and hence—since there are no other magnitudes—pure magnitudes in general, are the products of the perceptive or constructive activity of our reason, and as such they are completely knowable. The doctrine of magnitudes or pure mathematics has, therefore, before all other theoretical sciences, the character of a perfectly evident and purely rational knowledge. It was this fact which led Kant to declare "that in each of the natural sciences precisely as much exact science can be found as there is mathematics."[2]

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[1] The German here is *Vorstellung.* The rendering given (idea) is retained in all similar references throughout, as being, perhaps, on the whole, the most satisfactory. The verbal noun *Vorstellen,* as in "*Gesetze unseres Vorstellens,*" and like expressions, is uniformly rendered "thought." In such connections the word is used by Prof. Fischer as comprehending perception and understanding—*i. e.,* as designating all finite thought, or all thought that is conditioned by space and time, and thus, from the critical point of view, as being co-extensive with theoretical, or scientific, or knowing reason. The verb itself, *vorzustellen,* has been usually rendered "to conceive," or "mentally represent." The reader will please carefully distinguish *i*dea (Vorstellung) from *I*dea (Idee), which occurs later in the discussion.—Tr.

[2] Kant: "Metaphysische Anfangsgründe der Naturwissenschaft. Preface." ("Werke," vol. viii, p. 444.)

A refutation of the "Transcendental Æsthetic" would affect the whole doctrine of transcendental idealism, and thereby the entire basis and character of the Kantian doctrine of knowledge, and the Critical philosophy in general. But a false interpretation is no refutation. We have now to concern ourselves with views which mistake the sense of the Kantian doctrine, and thus attack it with arguments which necessarily prove ineffectual.

II. OBJECTIONS TO THE "TRANSCENDENTAL ÆSTHETIC."

To the Kantian doctrine of space and time, as the two primitive perception-forms of our reason, two objections present themselves, one calling in question the primitive or *a priori* (transcendental) character of these two ideas, the other their *anthropological* character. The first denies the unconditional validity of mathematical, and especially geometrical, axioms, and makes the idea of space dependent upon empirical conditions; the second denies the anthropological origin and character of these fundamental perceptions, in order to be free to maintain their cosmological and universal validity. Since both objections lie so near the surface that it is impossible that Kant could have overlooked them, it will suffice to set the sense of his doctrine in a clear light in order to secure its foundations against these attacks.

1. *First Objection: The Relative Validity of Geometrical Axioms.*

Kant by no means teaches the unconditional validity of geometrical axioms, but one entirely dependent upon our idea of space. Why we have this, and not some other space-perception; why our reason in general is thus, and not otherwise, organized—these questions Kant does not, it is true, leave untouched and uninvestigated, but yet unsolved; indeed, he explicitly declares them to be incapable of solution. According to his doctrine, we may regard the organization of human reason, and the space-perception it involves, as a *primitive fact;* but this may not be characterized as empirical, since experience is the product of reason, not its condition.

If there were beings possessing perception of space of only two dimensions, this perception would be for them a primitive fact, and in consequence they would just as necessarily be destitute of

the ideas of solids, as we must necessarily possess and cultivate those ideas. If it be true of plane surfaces, that a straight line is the shortest distance between two points in the surface, that between these two points there is only *one* such line, that two straight lines cannot inclose space, etc., these propositions would not be nullified by the fact that it is otherwise regarding the connection of two points upon the surface of a sphere, as, *e. g.*, the extremities of a diameter. That a definite space-perception is the luminous ground of knowledge from which certain insights follow, which *under this presupposition* are now and forever, *i. e.*, *apodictically*, valid—this was the fact which arrested the attention of Kant, and which he was only able to explain by regarding the original ground of all our ideas of space—space itself—as a ground-form of our thought, or as a fundamental perception of our reason.

The validity of our mathematical insights is, therefore, according to the explicit teaching of our philosopher, by no means unconditioned, but, on the contrary, absolutely dependent upon our space-and-time-perception. But under this presupposition it is apodictic in a way which no other sort of knowledge is. The character of knowledge changes with the change of its conditions. If we should substitute for our discursive understanding an intuitive one, and for our sensible perception an intellectual perception, knowledge would no longer follow the way of experience, but see and penetrate everything at a glance.[1] If we should substitute for our *external* space-perception—*i. e.*, the perception of space of three dimensions—some other, the character and compass of our mathematical ideas would change accordingly, but not the apodictical certitude of judgments based upon the corresponding construction and perceptive insight. This point contains the fact which at once characterizes and explains the nature of mathematics. Hence those objections which found upon another space-perception some other sort of geometry and its axioms are so little calculated to refute Kant's doctrine that they much more may and should appeal to it.

If it can be proved that 2×2 is not in *all* cases equal to 4, that in our perception of a plane surface a straight line does not in all

[1] Cf. *infra*, iii, 1, p. 25, *et seq.*

instances describe the shortest distance between two points, etc., then for the first time is Kant's doctrine refuted. To him pure mathematics seemed the only science in which knowing and creating, thought and object, were one and the same. Because pure magnitudes are constructions, or the products of perception, he regarded space and time as the perceptions of reason, or as the perceptive activity of reason itself. Because our notions of magnitude presuppose the perceptive or sensible knowledge of magnitude, he regarded space and time as the ground-forms of *sense*, not of understanding.

Even if these objections, which seek to base themselves upon the empirical origin of geometry, were stronger than they are, they would still prove ineffectual against the doctrine of the ideality of all phenomena, since they refer only to space, not to *time*. If time is a pure idea, or a form of perception, phenomena in time can contain nothing independent of all ideas. Now, *all* phenomena are in time, the objective as well as the subjective. But if objective phenomena are ideas, then space, since it contains all objective phenomena, can be nothing real in itself, but only the ground-form of our external perception. The transcendental ideality of time establishes the ideality of *all* phenomena, even that of *objective* phenomena, hence also that of space.

2. *Second Objection: The Uncritical View of the World.*

The objections which our common consciousness opposes to the systems of great thinkers are in their eyes generally the most insignificant of all, yet, because of the constant obstruction they offer to the comprehension and diffusion of these systems, they always prove themselves the most potent; for, like our feelings and sensations, they are not to be silenced with reasons, and are, as Schiller's "Wallenstein" says, "like the women, who always come back to their first word when one has preached reason for hours." Such an inflexible and uncritical way of thinking has always, among all the doctrines of Kant, found the most fault with the "Transcendental Æsthetic," since it maintains that space and time are mere perceptions of *human* reason, and nothing apart from the latter. Accordingly, as it seems, space and time can first appear in the world with our reason, hence with the existence of man, and can therefore neither be given before his origin, nor endure after him.

Now, we are obliged to conceive the human race as originated and as perishable, and yet we cannot possibly conceive the universe, which contains in itself the conditions of the origin as well as the destruction of the earth and its inhabitants, without space and time. It seems highly absurd, therefore, to seek to confine these two fundamental conditions of all natural existence to the organization and limits of human reason, as if it possessed and monopolized them. Kant himself, indeed, before introducing his new doctrine of the ideality of space and time, taught the mechanical origin and development of the cosmos, and the natural history of the heavens and of the earth, and its organic life. But with this view of the world as an historical development the idealistic doctrine of space and time appears to stand in the most open opposition. Surely Kant could not have been sensible of this contradiction, since he has nowhere made it the subject of especial discussion and explanation. Meanwhile the natural consciousness, which, with its ideas of space and time, finds the Kantian perfectly incomprehensible, is not disabused of its objections. Even an admirer and connoisseur of the Kantian philosophy, a man of remarkable and recognized acumen, was accustomed to shake his head at this doctrine, saying that it was utterly incomprehensible to him. But Kant's doctrine of space and time is the foundation of his doctrine of knowledge, and the way to his doctrine of freedom. Nothing, therefore, would remain of the Critical philosophy if *this* doctrine be rejected.

In fact, there is *no* contradiction between Kant's view of the world as a natural development in time and his "Critique of Reason." In the first place, both have different subjects of inquiry: that of the first is the explanation of the world, that of the second the explanation of knowledge. The problem of the explanation of the world is: How did the *world* in which we live originate according to natural and mechanical laws? The problem of the "Critique" is: How did this our *explanation of the world* originate according to the laws of our reason and thought? There the question is regarding the phenomena of nature, here regarding the knowableness of the same. These phenomena would not be phenomena, *i. e.*, they could not *appear* to us, if they were not intelligible and knowable. The entire fact of our idea of the world could not exist if natural objects were inconceivable or contained

anything inconceivable. And this would necessarily be the case if the elements of which they consisted were not determined by the character and conditions of our thought. Their matter is determined by the manifold of our impressions, which we receive by means of sense, and consequently regard as *given;* these impressions are the matter of phenomena. Their form is determined by the *laws* of our thought, which we regard as pure forms of reason, and the content of which Kant called pure reason; these laws constitute the form of phenomena. Phenomena, therefore, are through and through *ideas.* Phenomena, objects of experience, and the progressive Science of Experience, are all created from the matter of our sensations in accordance with the rational laws of our thought, the latter having partly the character of constitutive, partly that of regulative, principles. These laws determine the world of phenomena because they constitute it. They are, therefore, within the realm of phenomena, *world-conditions* or *world-principles.* But their meaning is entirely mistaken when only an anthropological or psychological validity is ascribed to them. They cannot be established by psychology, because they first make psychology itself possible. The Kantian "Critique o. Reason" is no anthropological investigation.

And here those objections which our unscientific view of the world oppose to the Critical philosopher and his doctrine of space and time refute themselves. Space and time are the laws of perception imposed by our reason, and as such they determine the entire world of sense, because they first make it in general possible. Their cosmical or universal validity—which the natural sense so rightly demands and holds fast—is therefore so far from being disproved by the "Critique of Reason" that it is, the rather, thereby first really established. At the same time, however, this validity is limited in such a way that there may still be something independent of space and time, while the common consciousness, uncritical and thoughtless as it is, regards space as the huge box, and time as the vast stream, in which everything that is must be contained.

Man, as a natural individual, or as anthropology regards him, belongs to the phenomena of nature, and is a part of the world of sense. He is the result of a definite stage in the world's history—a stage which forms a link in the chain of world-changes, and

which presupposes a succession of earlier stages. That the origin and development of man must be regarded and investigated as natural, historical facts, Kant was so far from denying that he much more proposed to himself the thesis, and demonstrated by his criticism of reason, and more especially by his doctrine of space and time, that the necessity of its affirmation follows from the conditions of our knowledge. Natural, historical man is, therefore, by no means the sole proprietor of space and time; they are not dependent upon him, but he, like all phenomena in general, is conditioned by them. When space and time are called the pure perceptions of *human* reason, it is very essential to distinguish the sense in which this word is taken; it denotes man as the *knowing subject*, not as one of the objects of knowledge. As the subject of all knowledge—so far as we are capable of investigating the latter—our reason is the condition of all objects in general, or of the entire world of sense, in which in the course of time the natural human race appears and develops itself in a time-succession, which necessarily involves a preceding and a succeeding world. For all phenomena are in time; each has its time-duration, before and after which there is time, since they all originate and pass away, with the single exception of matter, which persists. But the knowing subject is not in time, but time in him, for it is the fundamental form of his sensuous thought.

If, on the other hand, space and time be regarded, with Schopenhauer, as the forms of perception of our intellect, and at the same time be declared to be animal functions of the brain, then there arises for the first time that absurdity which obviously describes a *circulus vitiosus*—viz., space and time are made dependent upon a condition, which, like the animal organism and the stages of nature and animal life preceding it, is itself only possible under the conditions of space and time. If the latter are, as Schopenhauer teaches, the "*principium individuationis*"—*i. e.*, the ground of all multiplicity and diversity—they cannot possibly be, as, notwithstanding, Schopenhauer also teaches, the result and functions of individual organisms. Nor was Schopenhauer ever able successfully to explain away or to solve this erroneous circle, grounded as it is in a fundamental feature of his doctrine.

III. THE DOCTRINE OF THINGS-IN-THEMSELVES.

1. *The Sensuousness of Pure Reason.*

The knowing subject is not in space and time, but these in him; hence the entire world in space and time is purely phenomenon or idea; it is through and through phenomenal and ideal. This doctrine constitutes the Transcendental Idealism, which founds and characterizes the Kantian doctrine of knowledge. If, now, in the knowing subject there was nothing given, but, on the contrary, everything was *created* by it, the world of phenomena would be entirely its creation; its notions would be immediate perceptions, its faculty of knowledge would consist in perceptive thought—*i. e.*, in an intuitive understanding, or in an intellectual perception, to which everything it creates appears at once as object or thing. Then knowing and creating would be completely identical, then there would be no difference between sense and understanding, perception and thought, objects and notions, phenomena and things-in-themselves.

Such a faculty of knowledge is not in itself impossible or inconceivable, but it is *not* the one we possess; ours does not create things, but develops itself and its objects. Kant taught repeatedly, and indeed always, with the utmost explicitness, that our understanding is *discursive*, not intuitive, our perception *sensuous*, not intellectual. He accordingly carefully distinguished between sense and understanding, and explained human knowledge in such a way that it is from the matter of impressions and sensations, which have and retain the character of something given, that we produce phenomena, and the knowledge of phenomena, or experience.

Intuitive understanding is creative, and therefore divine; but human understanding is not intuitive; nor is it pure subject, for to the character of human reason, as Kant investigates it in his "Critique," there belongs *sensuousness—i. e.*, the capacity of receiving, and being sensible of, impressions, or of being affected by a manifold. Sense must not be identified with the organs of sense, which are its medium, nor with the definite sensations they convey, since they [the organs] belong to the constitution of the human body. Yet our sensations as such presuppose a faculty of sense or receptivity, which enables us to be affected by a manifold

of impressions, and without which the matter of knowledge would fail—*i. e.*, knowledge would remain empty, hence in general not exist at all. This sensuousness Kant ascribes to pure reason, since it is not, in the first place, a question of the sort of affections or the quality of impressions, but only of the capacity itself of receiving something given. Our reason must form and work up the given material, according to the laws of its perception and thought, into phenomena, experience, and empirical knowledge.

Our knowing reason would be creative, hence divine, if it were not *sensuous—i. e.*, capable of being affected by impressions, which it must receive, and which it can only combine and systematize. It is therefore not generative of the matter of knowledge, but merely *form-giving*, not creative, but *architectonic*. Since it does not make the matter of knowledge, but only receives it, it is receptive, and in this respect not original, but dependent. But the entire organization of its knowing faculty is conditioned by its sensuousness. Sense is one faculty, understanding another; this is receptive of material, that form-giving and productive; this is passive, that active; this receives impressions, that creates notions. Hence our perceptive faculty is not intellectual, but sensuous, our understanding not intuitive, but discursive—*i. e.*, it is obliged to take up its perceptions one by one, and proceed by connecting part with part, comparing perception with perception, and by uniting these to pass from perceptions to notions and judgments. Consequently the objects of our knowing reason are not entirely its own products; they are constructed out of matter and form; the former is given to it, the latter is given or added by it. Our knowledge of things (objects), therefore, consists in a gradual experience; it is not complete in an instant, but originates and develops itself. We are obliged to think objects in *succession*, and hence also in *co-existence;* since nothing would persist in a mere succession, thus also nothing could be thought. Space and time are therefore the fundamental conditions, or, since nothing can be thought without them, the *fundamental forms*, of our thought; they are, since every perception must be combined part by part, the fundamental forms of perception; and since our perceptive faculty is not intellectual, but sensuous, the fundamental forms of sense: in short, they are the *fundamental perceptions* of our reason.

With a creative or divine reason, knowing and creating, idea and thing, must be one and the same. It could be conditioned by neither space nor time. Our reason is distinguished from the divine by its sensuousness; with it, space and time are the necessary forms of all thought and of all knowledge. We ourselves are the only sensuous-rational beings which we know. Hence sensuous reason is equivalent for us to human reason. And thus, since *sense* belongs to the pure reason which Kant investigated in his "Critique," it was called by him—although the only reason knowable to us—*human* reason. Now, sense, as the capacity of receiving material, is of a dependent and derived nature. And this must be true of the entire organization and constitution of our knowing reason, since without sensuousness it would be an entirely different one from what it is.[1]

Let us hear Kant himself. Quite at the beginning of the "Transcendental Æsthetic" he says: "The capacity of receiving ideas in the manner in which we are affected by objects I call *sense.* By means of sense, therefore, objects are given to us, and it alone furnishes us *perceptions;* objects are thought, however, by the understanding, and it is from the latter that *notions* arise." "The action of an object upon the faculty of representation—that is, so far as we are affected by it—is *sensation.* Perception which is related to an object through sensation is *empirical.* The indeterminate object of an empirical perception I call *phenomenon.* That in phenomena which corresponds to sensation I call the *matter* of phenomena; that, however, which makes it possible that the manifold of phenomena be disposed in certain relations I call the *form* of the same. Since that whereby sensations can alone be ordered and set in definite form cannot itself again be sensation,[2] so, although the matter of all phenomena is indeed given only *a posteriori*, the form of the same must, on the contrary, already lie *a*

[1] On the discursive and intuitive understanding. Cf. Fischer: "Gesch. d. n. Philos.," vol. iv, pp. 494–498.

[2] The liberty has been taken of correcting a probable oversight in quoting here, as it is of importance to the sense. Kant reads *Empfindung* (sensation), not *Erscheinung* (phenomenon), as given in the text of Prof. Fischer. Also in the following quotation, beginning "It is not necessary," etc., the recent edition of Benno Erdmann has been followed, instead of reading in the affirmative (It *is* necessary) with the edition from which Prof. Fischer quotes (vid. Note, p. 1), as the sense certainly substantiates the more modern reading.—Tr.

priori as an entirety in the mind, and, consequently, must be capable of being considered wholly apart from sensation."[1] At the close of the "Transcendental Æsthetic" Kant says: "It is not necessary, either, that we limit perception in space and time to human sensibility. It may be that all finite thinking beings are necessarily like man in this respect (although that cannot be determined), yet it would not cease, even on account of this universality, to be *sense*, because it is a *derived* (*intuitus derivatus*), not an original (*intuitus originarius*), hence not an intellectual, perception. Such a perception seems, on the ground just brought forward, to belong only to the Primitive Being, not, however, to a being dependent as well in its existence as in its perception, which latter determines the relation of its existence to given objects. This last observation in our Æsthetic theory, however, must be made merely as an explanation, not as anything fundamental."[2]

2. *The Thing-in-itself.*

Our knowing reason is accordingly not creative in reference to the matter of all phenomena and knowledge, but merely receptive. It receives this matter in virtue of its sensuousness; hence the latter is dependent and conditioned. And here arises the necessary inquiry concerning the *origin* of our impressions or sensations. Since these are the material which our faculties of knowledge mould and form, they cannot themselves proceed from the latter, but are rather the necessary conditions by which these faculties are aroused and set into activity. And, since they constitute the matter of all phenomena, we cannot derive them from phenomena without falling into the erroneous circle of first deducing phenomena from impressions, and then impressions from phenomena. Indeed, they can in no way originate from the world of sense, since the sense-world first arises from them. From this it appears that the *origin* of our sensations is not itself a phenomenon, and hence does not constitute a knowable object. It is the subject of necessary inquiry, but not that of knowledge. It is something which precedes and lies at the basis of all experience, but which itself can never be felt, conceived, nor experienced. This unknown

[1] Kant: "Kritik d. r. Vernunft. Transc. Elementarlehre," Part I, § 1. (Werke, vol. ii, pp. 59, 60.)

[2] Ibid., p. 86, *et seq*

and unknowable object is that transcendental *X* which the Kantian doctrine must necessarily have met in the course of its inquiry beyond, or, better said, within the limits of human reason.

We are thus obliged to posit as the cause of the impressions we receive something which lies at the basis of sense, and hence at the basis of the whole constitution of our knowing reason; hence, also, at the basis of all phenomena and the entire sense-world. But precisely on this account it cannot itself be anything sensible, cannot be a phenomenon, cannot be an object of knowledge. This "supersensible substratum" Kant calls *Thing-in-itself*, designating thereby that transcendental *X* which the "Critique of Reason" introduces, and which it sees itself, on the grounds pointed out, obliged to introduce into its calculation. It is called thing-in-itself in distinction from all phenomena. If our reason were not sensuous, but divine, not receptive, but creative, then its ideas would be things themselves, then there would be no difference between phenomena and things-in-themselves. Since, however, it *is* sensuous, space and time are the ground-forms of its perception, its objects of knowledge are phenomena, and these merely ideas, hence not things-in-themselves. Consequently, in the critical investigation of reason we must distinguish between phenomena and things-in-themselves with the utmost precision, regarding every attempt to unite the two as the cause of irremediable confusion.

Now, because the objects which relate themselves to the thing-in-itself, or the relations which the latter sustains, are so numerous and so unlike, we see why the thing-in-itself appears in Kant's teachings in so many and different references. For it is the supersensible substratum at once of our sensibility and of the whole constitution of our knowing reason; hence it is the hidden ground of all phenomena, the objective as well as the subjective, and therefore the substratum of the entire sense-world. In reference to sense, which is merely receptive of the matter of knowledge, it functions as the matter-giving principle, or as the cause of our sensations. In reference to the constitution of our knowing reason in general, it is represented as the hidden ground of our mode of perception and thought, *i. e.*, as the cause of our perceiving and thinking, and mentally representing to ourselves objective and subjective phenomena. Since phenomena are in space and time and hence consist throughout in external relations, the thing-in-

itself is called, in distinction therefrom, "the *inner*, that which belongs to objects in themselves"—an expression which demands careful attention, lest the radically false impression be received that the thing-in-itself lies hidden somewhere *in* phenomena. The meaning rather is, that the thing-in-itself is not external, not related to another, hence not in space and time at all. Since all phenomena are empirical objects, the thing-in-itself is called in distinction therefrom "*the transcendental object.*" Since all phenomena are ideas, and not objects external to and independent of thought, the thing-in-itself functions as "*the true correlate* of our ideas." And, since phenomena alone are objects of knowledge, the thing-in-itself denotes the bounds of our knowledge, and functions as "the *limiting notion* of our understanding. In all these manifold meanings we see no self-transforming Proteus, but one and the same thing, which the philosopher is obliged to exhibit in different forms according to the various relations which it sustains.

Let us take Kant's own words. He says in the doctrine of space: "The transcendental notion of phenomena in space is a critical reminder that in general nothing which is perceived in space is a thing-in-itself, nor space a form of things, which might be in itself in some way peculiar to them, but that objects in themselves are for us, indeed, unknown, and what we call external objects are nothing other than pure ideas of our sense, the form of which is space, the *true correlate* of which, however—*i. e.*, the thing-in-itself—is thereby not known, nor can be known; and for the latter no quest, likewise, is made in experience."[1] "For the substantiation of this theory of the ideality of external as well as internal sense, hence of all objects of sense as pure phenomena, the observation may be of especial service, that everything in our knowledge which belongs to perception contains nothing except mere relations—namely, the places in a perception (extension), change of place (motion), and the laws according to which this change of place is determined (moving forces). What, however, is present in a place, or what beyond the change of place is occasioned in the things themselves, is not thereby given. Now, a thing-in-itself is not known through mere relations. Hence it is to be carefully noted that, since nothing save pure ideas of relation are given to

[1] Kant: "Krit. r. V. Transc. Æsth.," § 3. (Werke, vol. ii, p. 68, *seq.*)

us through external sense, this also can contain in its idea only the relation of an object to the subject—and not "*the inner, that which belongs to the object in itself.* With internal perception the conditions are the same."[1]

The substratum of our external and internal perception is also that of our external and internal phenomena, that of the constitution of our knowing reason in general, and of our sensibility and understanding; hence it is the ground of our special ideas as well as of our thought. Kant says: "That something which lies at the basis of objective phenomena, and which so affects our sense that it receives the ideas of space, matter, form, etc.—this something, regarded as noumenon (or, better, as transcendental object), might also be at the same time the subject of thought, although, through the mode in which our sensibility is thereby affected, we receive no perception of idea, will, etc., but only of space and its determinations. This something, however, is not extended, not impenetrable, not composite, since all these predicates belong only to sense and its perceptions, so far as we are affected by such (otherwise to us unknown) objects."[2]

That we mentally represent objective and subjective phenomena, have sensibility and understanding, that we perceive and think—herein consists the organization of our knowing reason. We discover *that*, but not *why*, it is so and not otherwise constituted. To take Kant's own words again: "The notorious question concerning the community of thought and extension would consequently, if everything imaginary be excluded, amount to the following: *How is external perception*—namely, that of space (a filling of the same, form and motion)—*in a thinking subject in general possible?* But to this question it is impossible for any man to find an answer. And this gap in our knowledge can never be filled, but only in so far characterized that external phenomena be ascribed to a transcendental object which is the cause of this sort of ideas—an object, however, which we by no means know, nor of which we can ever obtain a notion. In all the problems that may arise in the field of experience, we treat these phenomena as objects in themselves, without troubling ourselves about the original ground of their possibility (as phenomena). If, however, we go

[1] Ibid., § 8, p. 83.

[2] Ibid., Tr. Dialektik: Krit. 2 Paralog.

beyond their limits, the notion of a transcendental object becomes necessary."[1]

The philosopher Eberhard, in Halle, who held that after the Leibnitzian doctrine of knowledge the Kantian "Critique of Reason" was unnecessary and superfluous, made the criticism upon the latter that it was not able to explain the matter of sense—namely, sensations—without things-in-themselves. "Choose which we will," he says, "we come upon things-in-themselves." Kant invalidates this stricture by at once affirming and correcting it. He replies: "Now, that is precisely the constant assertion of Criticism; only that it does not set the ground of the matter of sensuous ideas anew in things, as objects of sense, but in something supersensible, something which lies *at the basis* of sense, and of which we can have no knowledge. Criticism says: 'Objects, as things-in-themselves, *give* the matter for empirical perceptions (they contain the ground for determining the representative faculty according to its sensuousness), but they *are* not that matter.'"[2]

In the sentence just cited, one may read word for word what every student of the "Critique" knows, and what astonishes no one—viz., that objects as things-in-themselves *furnish*, but not *are*, the matter of empirical perceptions—*i. e.*, sensations; they are its *cause*. Zeller very rightly says: "There can be no doubt that Kant always maintained an object in this sense, and derived sensible perception therefrom." From Zeller's preceding sentences it appears in what sense he takes "object" here He understands by it, with Kant, "the transcendental object," or "the thing-in-itself."[3] But a contemporary weekly anonymously informs its readers that, according to Kant, "things-in-themselves are not the cause of our sense-perceptions, also not the ground that sense-perceptions are possible for us, but the ground of objects, the importance of which for the possibility of experience means transcendental object." The first assertion is absolutely false, and an evidence of the ignorance of the author; the second is perfectly senseless, and an evidence of confusion and prattling

[1] Ibid., "Betrachtung über d. Summe d. reinen Seelenlehre," vol. ii, p. 696, *seq.*

[2] Vid. Kant: "Ueber eine Entdeckung, nach der alle neue Kritik der Vernunft durch eine ältere entbehrlich gemacht werden soll" (1790). Werke, vol. iii, p. 352.

[3] E. Zeller: "Gesch. d. deutschen Philos. seit Leibnitz," second edition, 1875, pp. 352, 353.

absurdity that characterizes the whole scribble. When the writer charges me with regarding the expressions "*transcendentales Object*" and "*transcendentaler Gegenstand*" as synonymous, and both as Kantian designations of the thing-in-itself, he simply displays his own ignorance of Kant's teachings.[1] When, however, he charges me with confounding "thing-in-itself" with "things external to me," the statement is a falsehood, since, following the precedent of the Critical philosophy, I always distinguish, and make it my care to distinguish, with the utmost exactness, between these two notions. It is indeed a fact unworthy closer attention, yet nevertheless curious, that a doctrine which Kant expressly declared to be "*the constant assertion of his* 'Critique'" should to-day be denied the Philosopher, and the senseless opposite ascribed to him. And this occurs even in a so-called prize-essay on Kant.[2]

In order to a just estimate and criticism of the Kantian philosophy, it is of vital importance that the doctrine of the thing-in-itself be understood in its origin and development as well as in its scope. It too commonly happens that it is falsely and one-sidedly taken, as when things-in-themselves are referred merely to the objects of knowledge or phenomena, and transferred to them, as if they were contained *in* them, like the kernel in the shell, only that they remain hidden from us as sentient beings. The Empiricists, who, like Bacon and Locke, granted the validity of no other than sensible knowledge, declared things-in-themselves to be unknowable, while the Rationalists, as Descartes and Leibnitz, held sense to be confused understanding, clear and distinct thinking, on the contrary, to be the true form of knowledge, and therefore things-in-themselves to be the true objects of knowledge. Then things-in-themselves and phenomena are the *same* objects; when perceived, they are things as they appear to us; when clearly and distinctly thought, on the contrary, they are things as they are in themselves. The same thing is, therefore, according to the way

[1] That is, the expressions in question *are* synonymous, and both used by Kant to designate the thing-in-itself; there is, then, no ground of criticism. The "senseless" clause referred to reads: "wohl aber [die Dinge an sich] sind der Grund Gegenstände, deren Bedeutung zur Möglichkeit der Erfahrung der transcendentale Gegenstand heisst." The writer may possibly intend, . . . *leads them to be called* transcendental object.—Tr.

[2] Vid. "Grenzboten," No. 40 (1882), p. 12. Cf. K. Lasswitz: "Die Lehre Kant's von der Idealität des Raumes und der Zeit" (1883), p. 132, note

in which it is apprehended—whether by sense or by understanding, whether obscurely or distinctly—phenomenon or thing-in-itself. In precisely this confusion Kant saw the fundamental error of the Dogmatic philosophy, and especially that of its metaphysics. According to him, both the above notions are to be absolutely distinguished. The thing-in-itself is the supersensible substratum of phenomena, *because* it is that of our knowing reason, *because* it is that of our sensibility, which has, but does not create, sensations, and receives impressions, which can be caused neither by it itself nor by one of its objects.

Chapter II.

The Kantian Philosophy as Doctrine of Freedom.

I. KANTIAN REALISM AND IDEALISM.

It is not our purpose at this point to inquire whether the fundamental doctrines of Kant accord or discord with one another, whether, and in how far, they are uncontroverted, or indeed recognized as incontrovertible. We desire here simply to fix in mind that the recognition of the reality of things-in-themselves, and of their distinction from phenomena, is an essential part of those doctrines. This recognition is related to the doctrine of the ideality of phenomena, as the thing-in-itself to the latter, and it thus forms in the doctrinal edifice of Kant at once the substructure and the necessary completion of transcendental idealism. To deny or misapprehend the recognition of things-in-themselves and their differentiation from phenomena means to shake the foundations of the Critical philosophy. When the reality of things-in-themselves is indeed affirmed, but yet they are not properly distinguished from phenomena, there arises that confusion of both which constitutes the character and fundamental error of the *Dogmatic* philosophy. If there were merely things-in-themselves and no phenomena, all knowledge would be impossible. If there were merely phenomena and no things-in-themselves, the sense-world we conceive would be a *dream*—a dream common to us all, to be sure, and harmonious in itself, but yet a purely subjective image without actual ground or consistence. The knowableness of the world consists in its ideality, *i. e.*, in its being through and through capable of repre-

sentation in thought, and in its being so represented. This characteristic the Critical philosophy, as transcendental idealism, teaches and establishes. The reality of the world consists in that which lies at the basis of all phenomena—since at the basis of all ideas and all faculties of thought—and which is designated by the Critique as "thing-in-itself." In this sense the doctrine of phenomena may be called the Kantian *Idealism*, the doctrine of things-in-themselves the Kantian *Realism*.

II. THE THING-IN-ITSELF AS WILL.

1. *Intelligible Causality.*

Kant regards things-in-themselves as the supersensible substratum of our knowing reason and sense-world, as the matter-giving principle, or as the cause of our sensations. He ascribes to them, accordingly, a *causality* which is to be taken in an entirely different sense from that category of cause which determines the succession of phenomena in time, and thereby both renders our experience possible and creates it, but which also, precisely on that account, has validity only within the latter. This notion is a rule of the understanding, which may only be applied to phenomena, hence not to things-in-themselves. Kant knew this, and taught it. One must not assume that such a thinker has entangled himself in his own doctrines in so clumsy and apparent a manner as composedly to apply to things-in-themselves the very *same* notion which he had shown to be invalid for them. Kant distinguishes two sorts of causality which are inherently and essentially unlike: "the conditioned or sensible" and "the unconditioned or intelligible." The former is valid only for phenomena, the succession of which in time is determined and constituted by it alone; the latter is not valid for phenomena, and is independent of all time. Now, things-in-themselves are timeless and causal; hence their causality is the unconditioned and intelligible, which, according to Kant's doctrine, consists in *Freedom* or in pure will, and this constitutes the moral principle of the world.

2. *The Moral Order of the World.*

There is still another world than the sensible and time-world, namely, an intelligible world, which is completely independent of

the former—a world which must not be sought after and thought of as an heavenly world of spirits existing somewhere beyond our common experience, yet of necessity still in space and time—this would be the way to Swedenborg's Mysticism—but a world which we recognize as the *moral world*, that in which the laws of freedom find their recognition and fulfilment. The intelligible world is the *World as Will*, the sensible world is the *World as Idea* (*Vorstellung*); the former is related to the latter as thing-in-itself to phenomena; in other words, it *is* the thing-in-itself, and lies at the base of the sense-world; hence it is independent of the latter, while this is dependent upon it. But just as the sensible world is related to the intelligible, so our faculty of knowledge must be related to the will, or, what is the same thing, our theoretical to our practical reason; the latter is independent of the former, while the former is dependent upon the latter. Herewith is that relation determined which Kant called "*the Primacy of Practical Reason.*" He saw himself obliged to hold the reality and causality of things-in-themselves, and to identify the latter, as intelligible causality, with freedom or pure will, and thus to teach the primacy of practical reason. In other words, the true or real principle of the world is, according to Kant, not knowing reason, but will.

The goal of our will is, according to the law of freedom, the *purity* of volition. This goal is to be striven for and attained; the endeavor finds its expression in the purification of the will, which constitutes the real ground-theme of the moral world. Since now without the sense-world no sensuous motives or appetites could be operative in us, hence no material of purification given, this itself consequently aimless and superfluous, it becomes clear that the entire sense-world, unobstructed as to its own laws, constitutes a necessary member and an integral part of the moral world; that it is compassed and swayed by the latter; and that the laws of nature are subordinate to the laws of freedom, although they are thereby in no way suspended or annulled. As thus understood, our sensible life acquires a moral meaning, and becomes a *moral phenomenon*, in which a definite disposition—*i. e.*, the will in a definite state of purity or impurity—reveals and manifests itself. The constancy of this disposition makes our moral conduct seem necessitated, *i. e.*, as the consequence of our given empirical

character. But since it is the *disposition*, or tendency of the will, which appears in our empirical character and forms its principle, the latter must be a *phenomenon of will*, or a *willed* phenomenon —*i. e.*, a phenomenon of the intelligible character or of freedom. Here we see how Kant's doctrine of intelligible and empirical character necessarily follows from his doctrine of freedom and purification. Without the ideality of time and space there is no possibility of a sense-world, but also no possibility of freedom. Without a sense-world and freedom there is no necessity for the purification of the will, no moral phenomena of a sensible and empirical sort, hence no empirical character as a manifestation of the intelligible, and no community of freedom and necessity in the conduct and characters of men. Because Kant first made this unity of freedom and necessity intelligible, Schopenhauer was led to call it "the greatest of all the contributions of human thought." And since the way to this insight could be won *only* through the doctrine of space and time, the same writer extolled the "Transcendental Æsthetic" and the doctrine of intelligible and empirical character as "the two diamonds in the crown of Kantian fame."

III. THE DOCTRINE OF GOD AND IMMORTALITY.

1. *Kantian Theism.*

The Idea and import of the moral order of the world comprehends in itself the question regarding the original ground of the same, as also that regarding the attainability of its highest end, namely, the purity of the will. The moral author of the world is *God*, and the purity of the will, or moral perfection, is not to be attainable in a temporal, but only in an *eternal* life—*i. e.*, through the immortality of the soul. According to Kant, the Ideas of Freedom, God, and Immortality go hand in hand. In the "Critique of Pure Reason" they are merely Ideas (*Ideen*), but in the "Critique of Practical Reason" they have the value of realities; and, indeed, it is only through the reality of freedom and the moral order of the world that the other two Ideas also are realized or made morally certain. It is utterly impossible, from the point of view of the sense-world, to comprehend and demonstrate the existence of freedom, God, and immortality. Indeed, all proofs directed to that end with the means furnished by our theoretical

reason must necessarily fail. Critical inquiry reveals the fact that these objects are incapable of demonstration, while at the same time it leaves the question of their reality untouched. Now, the doctrine of the ideality of time and space, and of the sense-world, has already established the possibility of freedom. But since time is purely our idea, we can distinguish ourselves from it, and must do so. There is, then, something in us which is independent of all time: this timeless something is freedom; and as it is the only condition under which the fact of our moral self-consciousness and the activity of the moral law within us can take place, not only the possibility, but the actuality of freedom is to be affirmed. The moral order of the world consists in the fulfilment of the laws of freedom. Without this moral order they would remain empty; they would not be *laws*, and freedom itself would be a mere fancy. There follows, from the moral order of the world, to which the sensible must be subordinate, the reality of the moral ground of the world (God), and the attainability of the moral end of the world, which includes in itself the perfection of the will, and therefore immortality. These are the so-called moral arguments with which Kant sought to demonstrate, through freedom, the primacy of practical reason and the necessary fulfilment of its postulates—the existence of God and the immortality of the soul.

These moral proofs have won for Kant many adherents, on account of their religious importance and the ease with which they are comprehended; but, owing to their apparent inconsistency with the results of the first "Critique," they have found antagonists as well, who have made them the subject now of honest criticism, now of ridicule. It has been asserted that Kant sought in the "Critique of Practical Reason," but with weak arguments, to raise up again as a makeshift for weak souls what he had already destroyed, and with conclusive argument, in the "Critique of Pure Reason." Among the writers on the Critical philosophy, Schopenhauer, in particular, is the representative of this view, and the most pronounced opponent of Kantian theism.

The doctrine of freedom and the absolute supremacy of the moral order of the world, or the doctrine of the primacy of practical reason, rests with Kant upon firm ground. The moral proof for the existence of God stands or falls with this doctrine. Re-

garding the *theoretical* demonstrability of the latter, Kant held different views at different stages of his philosophical inquiry. In his pre-critical period he sought to transform these demonstrations and to re-establish them; in the "Critique of Pure Reason" he not only denied, but refuted them, or demonstrated their impossibility; and in the "Critique of Practical Reason," as well as in that of "Theological Judgment," he neither abandons nor modifies this last position, but, in perfect agreement with it, deduces—using the well-known and evident arguments—from the necessity of the moral order of the world, the necessity of the moral ground of the world, or the existence of God. Accordingly, in what concerns the question of the *demonstrability* of the divine existence, we find no contradiction in the different views of Kant, but a logically consistent advance. But, however differently he may have thought on this point—namely, the *knowableness* of God—there was not a moment in the course of the development of his philosophical convictions when he denied, or even only doubted, the *reality* of God. And there is still a second and a third point which remained unquestionably certain to him, and even at the time of his most skeptical tendency, when he ridiculed Swedenborg's dreams of a spirit-world and of our intercourse with it: I mean his conviction that morality is *independent* of every sort of scientific knowledge, as well as of every doubt that may shake the latter; and that the spiritual world as well as spiritual intercourse consists merely in a *moral* community, or in the moral order of the world.[1]

2. *The Kantian Doctrine of Immortality.*

On the other hand, the way in which the *summum bonum* is conceived in the "Critique of Practical Reason"—the notion of it being produced with the aid of the Ideas of God and immortality—involves a series of difficult and doubtful considerations. And it will be advisable, in order to win a correct apprehension of the matter, that we take up our criticism of this doctrine of Kant's along with its characterization. For, since the Critical philosophy sees itself necessitated from the standpoint of its entirely new view of the world to affirm immortality, it is all-important that this affirmation be properly understood.

[1] Cf. K. Fischer: "Gesch. d. n. Philos.," vol. iii, pp. 229, 230, 252–254, 264, 265.

The *summum bonum* is recognized by Kant as the unification of virtue and happiness; as that state of blessedness which is merited by our worthiness, and appointed us by the justice of God. It is because the purity of the will must be attained, and yet cannot be attained in this our present life, that the "Critique of Practical Reason" postulates a future life—*i. e.*, the continuance and permanence of our personal existence, or the immortality of the soul. We will test this conception of the matter exactly according to the canons which the Critical philosophy prescribes for us.

In the first place, it is not at all clear why purity of disposition should be absolutely unattainable during our earthly existence. In reality, Kant has himself contradicted this assertion in his doctrine of religion. For he there exempts from these conditions not merely the ideal Saviour, but the Saviour in the actuality of the Person Jesus, expressly declaring that his example would not be practical and effectual if this purity should be either denied Him or ascribed to Him as a supernatural, miraculous power.[1] Hence the proposition that the goal of our moral perfection can be attained *only* in a future and eternal life does not stand proof.

This objection aside, it is further not evident in what respect the *permanence* of our existence is to help the matter. Permanence, like duration in general, is a time-determination, and as such it falls within time and the sense-world. If now moral perfection is not attainable in the present sense-world, owing to the temporal and sensible nature of our existence, then it will remain unattainable in the future sense-world, since the conditions of its impossibility are in no way removed. The eternal life must be distinguished from the temporal; even endless existence is not to be regarded as eternal life. And it is much to be regretted that Kant in his doctrine of immortality did *not* make this distinction. He demands "an *existence* and personality of the same rational being enduring to *infinity*."

But if immortality is recognized as continued existence or *future* life, we must ask: *How* can our personality still continue within time and the sense-world after our bodily existence has ceased? By a second earthly birth (transmigration of souls), or by removal

[1] Cf. K. Fischer: "Gesch. d. n. Philos.," vol. iv, pp. 309, 310, 321, 322.

to another, perhaps less dense, planet, as Jupiter, say—what Kant himself in earlier life held to be possible[1]—or by wandering through the starry heavens, or how else? Such questions present themselves, and yet they admit of no answer, or only a fanciful one; so that the doctrine of the immortality of the soul, considered as a *lasting duration* of our personal existence in time and in the sense-world, is degraded from a postulate of practical reason to an object of imagination and phantasy.

According to the demands of practical reason, our worthiness is to be the cause of our happiness, our purity that of our salvation. If we have attained the first, we have merited the second, and receive it from the hand of God. Now, we fail to see what sort of happiness that does not follow of itself from purity is still to be added. Self-denial is complete, all motives of self-love and self-seeking are subdued, and thus all the evils which make us unhappy have vanished. The pangs of an evil conscience have given place to the peace of a good one. If this blessedness still lacks anything, it can only be the fulness of *outward* goods, as compensation for the outward evils suffered—it seeming, perhaps, that, after achieving the heaven of a good conscience, we ought also, speaking in figure, to revel in Abraham's bosom! It is not clear with what right Kant, who in his doctrine of morals maintained and emphatically insisted upon the most rigid and even painful separation of morality and happiness, now demands, in order to the production of the *summum bonum*, the necessary unification of the two under the constant presupposition of their *fundamentally different* origin. Morality follows from the pure will, striving for happiness from the empirical will or self-love, which desires everything that promotes its well-being. Is, then, striving for future and eternal happiness less eudæmonistic, less covetous and selfish, than striving for present happiness? Kant's teaching says: Seek before everything purity of disposition, and happiness will fall to you of itself in virtue of divine justice. You may not desire and demand happiness, but you may, indeed, *hope* for it. As though this hope were not, too, a silent expectancy, covetousness, and requisition! With such a hope we are much like the polite servants, who demand nothing, even assure you they will take nothing, yet at the same time furtively open the hand.

[1] Cf. Fischer: "Gesch. d. n. Philos.," vol. iii, p. 148.

All these weak points in the Kantian doctrine of immortality, as they present themselves to us in the postulates of practical reason, may be traced to *one* fundamental error. The πρῶτον ψεῦδος lies in the fact that divine justice is apprehended after the standard of *temporal* justice, and made to consist in *retribution*. Accordingly, the disproportion between virtue and happiness in our present life demands an equalization which can and should be first realized in a future state. Kant established penal justice, the administration of which belongs to the power of the state, on the notion of the necessity of retribution. On the same notion he now founds a reward-dispensing justice, the perfect and infallible administration of which is only possible through God, and first exercised in the life beyond. He thus degrades eternal life to a future life, immortality to a mere permanence of personality, makes purity tantamount to a goal which is absolutely unattainable in the present, and the moral life to a series of states of perfection with which the states of recompense go hand in hand. Following this view, it must be demanded, as Emil Arnoldt has already aptly remarked,[1] that the degree of happiness be adapted and proportioned to the moral quality of our will, hence that the impurity of the will be accompanied with the corresponding punishments. And, as a will not completely purified has still the character of impurity, divine justice would be compelled to exercise its office of retribution in the other world chiefly by inflicting greater or less penalties, which would be appointed as according to the greater or less degree of our impurity. In this way we find ourselves in the midst of the labyrinth of the Platonic doctrines of immortality and retribution, while following the threads of the Kantian.

It is further not evident why, in our present life, the justice of God as granting rewards, and in the future life as inflicting penalties, should in each case cease or be suspended, which we are led to infer, since Kant as good as does not mention the latter in his doctrine of immortality. Why are the countless incongruities between virtue and happiness permitted even in this world? If they actually are, indeed, the incongruities which they seem to us to be! If they are not, as the omnipresence and justice of God compel us to believe, then also the conditions disappear under which divine

[1] E. Arnoldt: "Ueber Kant's Ideen vom höchsten Gut." (Königsberg, 1874), pp. 7–13.

justice is first in a *future* life to assume the office and character of an equalizing retribution.

Kant wanted to harmonize his new doctrine of freedom with the old doctrine of immortality and of retribution in a future world, and he sought to do this by recognizing and defending the latter as a necessary postulate of the former. This attempt must necessarily have failed, and, indeed, have been frustrated by the principles of the Critical philosophy itself. If the activity of God remains for us an unsearchable mystery, as Kant taught and must have taught, then he could not consistently have attempted to unveil the *mode of activity* of the divine justice, and have sought to determine it according to a standard that is subject to the conditions of time. And even saying nothing of the fact that he unjustifiably apprehended this mode of activity as retribution, and permitted it to appear as something comprehensible, he still was not justified in representing this divine retribution as inoperative in the present temporal state, and as first to be looked for in the future life.

Our aim is to judge the Kantian doctrine of immortality according to the fundamental canons of the Critical philosophy, and we desire, therefore, to amend it in agreement with them, not to reject it altogether. For we certainly appreciate that the new doctrine of freedom radically changes the doctrine of immortality also, and that the latter enters through Transcendental Idealism a new stadium of *affirmation*. Now, the apprehension as well as the determination of the problem of immortality depends upon the question whether we, with all that constitutes our being, are in time and space, or these in us. If time and space are the all-comprehensive, fundamental conditions of all existence, so that nothing can be independent of them, then it is matter alone which persists, while its forms change; then all particular things must originate and pass away; then no single being, no individual, hence also no person, can perpetually endure; on the contrary, each one has a definite duration in time which is so bound up with his being that the limits of this duration are the insurmountable limits of personal existence. Under this presupposition, according to which time and space are things, or determinations of *things-in-themselves*, there remains nothing further for us than either, in agreement with the above assumption, to deny every sort of individual (per-

sonal) immortality, or, in contradiction with it, to affirm and conceive of the latter in a wholly fanciful manner, merely to satisfy certain needs of the inner nature. All origination and decay takes place in time, and is only possible in time. Whatever is independent of all time, or has the character of timeless being, can neither originate nor pass away: this alone is *eternal*. Since now time as such is no thing-in-itself, but only the necessary form of thought, all things in time are ideas or phenomena, which depend for their existence upon a being to whom they appear, or who conceives and knows them. This being, however, since it constitutes the condition of all phenomena, is itself no phenomenon; it is not in time, but time in it; hence it is independent of all time—*i. e.*, timeless, or *eternal*. It is impossible that certain phenomena should originate, and then, instead of passing away, continue to exist *ad infinitum*. It is just as impossible that certain phenomena should pass away, and yet, instead of actually perishing, continue to exist in time and the sense-world in some secret manner. Yet this is the way in which the immortality of the human soul is commonly conceived—namely, the perishableness of human existence in time is at once affirmed and denied, and death thus regarded in reality as a mere formality.

The true notion of immortality coincides with that of *eternity*. Such immortality the Critical philosophy affirms and establishes through its new doctrines of time and space, of the ideality of our sense-world, and of the reality of that supersensible substratum which lies at the basis of our theoretical reason and its phenomena, and which Kant called "thing-in-itself" and exhibited as the principle of the moral order of the world. Now, just as all objects of sense are throughout phenomenal, so also our sense-life has the character of a pure phenomenon; and just as the entire sense-world is the manifestation of the intelligible or moral order of the world, so the empirical character of man is the manifestation of his intelligible character; that is temporal and transitory, this timeless and eternal. The eternity of our intelligible being must, like freedom, be affirmed, although immortality, as thus truly apprehended, cannot be represented to the mind, or drawn in the imagination, since to conceive it, or to fashion it pictorially, means to make it temporal, and therewith to deny it altogether. Since without sensuous ideas there are no knowable objects, the immor-

tality of the soul can never be theoretically demonstrated. But since all sensuous ideas stand under the condition of time, which is itself merely the form of our thought, our being is timeless or eternal, and the immortality of the soul can never be refuted; all proofs directed against the doctrine are just as futile as the *theoretical* arguments for it. On either side, the reality of time, and what is really tantamount to the mortality of our being, are first falsely assumed; and then the one, in order to establish the immortality of the soul, demonstrates its immateriality and indestructibility, while the other, in order to refute the same proposition, proves the soul's materiality and perishability. Invalid proofs may be confuted by showing their impossibility, but they cannot be nullified by demonstrating the opposite position with proofs which are equally invalid. Hence opponents are not to be driven out of the field by demonstrations of immortality. But one may, indeed, and without overstepping the bounds of a proper use of reason, oppose to them an *hypothesis* which they cannot refute, and which itself makes no claim to be theoretically demonstrable. *The Doctrine of Methods* in the "Critique of Reason" contains, in its section on the "Discipline of Pure Reason in reference to Hypotheses," a most noteworthy and characteristic passage, in which Kant commends to his adherents the doctrine of immortality in just such an hypothetical form, in order that they may make use of it in opposing their antagonists. "If, then," he says, "as opposing itself to the (in any other, not speculative reference) assumed nature of the soul, as being something immaterial and not subject to bodily transformations, you should meet with the difficulty of the argument, that experience, nevertheless, seems to show that both the increased capacity and the derangement of our mental powers are merely different modifications of our organs, you can weaken the force of this proof by assuming that our bodies are nothing but the *fundamental phenomenon*, to which as condition the entire faculty of sense, and herewith all thought, refers itself in the present state (life). The separation from the body would then be the end of this sensible use of your faculty of knowledge, and the beginning of the intellectual. The body would consequently not be the cause of thought, but merely an impeding condition of it, and hence to be regarded, indeed, as a furthering of sensible and animal life, but yet just in such meas-

ure as also an hindrance to pure, spiritual life. Thus the dependence of the animal life upon the bodily constitution proves nothing as to the dependence of the mental life upon the state of our organs. But you might go even farther and trace out some new query, which has been as yet either unsuggested or not sufficiently pursued. The fortuity of generation, for example—depending, as it does, with man as well as with the non-rational creatures, upon circumstance, and even upon sustenance, upon management, its humors and caprices, and often indeed upon vice—throws a great difficulty in the way of the notion of the lasting existence of a creature whose life began under such trifling and contingent circumstances. This difficulty, however, has little to do with the question of the permanence (here upon earth) of the whole race, since the contingency in individual cases is nevertheless on that account subject to general rule. But to expect in reference to every individual such a far-reaching effect from so insignificant conditions, seems certainly questionable. But in opposition to this query you could offer a transcendental hypothesis, that all life is strictly only intelligible; that it is not subject to time-mutations; that it neither has a beginning in birth, nor will find an end in death; *that this life is nothing but a pure phenomenon—i. e.*, a sensuous idea of the pure, spiritual life; that the entire sense-world is merely an image, which hovers before us on account of our present faculty of knowledge, and which, like a dream, has no objective reality in itself; that if we were to perceive things and ourselves as they *are*, we should see ourselves in a world of spiritual natures, our only true intercourse with which neither began at birth, nor will cease with the death of the body (as mere phenomenon). Now, although we do not *know* the least thing of all this which we here offer as a defence against our opponents, nor even maintain it in earnest—it is all by no means an Idea of the reason, but merely a notion thought out as a weapon of defence—we are, nevertheless, proceeding in strict accordance with reason, since we only show the opponent, who thinks to have exhausted all the possibilities of the matter by erroneously declaring that the want of its empirical conditions is a proof of the perfect impossible of what is believed by us, that he can just as little span, by the mere laws of experience, the entire field of possible things considered in themselves as we outside of experience can

achieve anything in a well-founded way for our reason. Whoever resorts to such hypothetical remedies for the assumptions of an over-confident disputant must not be held responsible for them, as if they were his own real opinions. He abandons them as soon as he has silenced the dogmatic presumption of his antagonist. For, however modest and moderate it certainly is, when one merely objects to or disagrees with the views of another, it always becomes, just as soon as one would have his objections recognized as proofs of the opposite, a no less arrogant and presuming claim than if he had made a direct attack upon the position of the affirmative party."[1]

It will not be difficult to determine in this hypothesis regarding immortality what is to be ascribed to the *theoretical* mode of conception and the method of Kant, and what to be regarded as his own most inward conviction. Conviction it plainly is—based upon the new doctrine of the ideality of time and the sense-world—that our sense-life has the character of a mere *phenomenon*, and that our intelligible being is independent of all time, hence timeless and free, eternal and immortal. If the sense-world were nothing but a dream that floated before us, or a scene which we contemplated like a theatrical performance, then it is self-evident that we should survive this passive state of imagination; for the end of the dream is not that of the dreamer, nor the end of the play that of the spectator. But the matter is not so simple. We are not only perceptive of the sense-world, but active in it; not merely spectators in the world's theatre, but actors as well. In other words, the world has no place for spectators but the stage; this is the scene where we live and act, where we appear as performers, and at the same time contemplate and recognize our own performance. Here, accordingly, actor and spectator are in so far one that, when the looker-on ceases to be a performer, he also ceases to be a looker-on. With our existence in the sense-world, our contemplation of things, and even the appearance of things, vanishes. With our sense-life our sensuous thought perishes, and together with it that knowledge the ground-forms of which are space and time. Corresponding to our timeless being there is the state of timeless knowing, or of that intellectual perception which

[1] Kant: "Kr. d. r. Vernunft. Methodenlehre," Part I, sec. 3. (Werke, vol. ii, pp. 583–585.) Cf. Fischer: "Gesch. d. n. Philos.," vol. iii, pp. 530, 531.

has immediate knowledge of the inner nature of things. It is this organ of knowledge which Kant means when, in the passage cited above, he sanctions the assertion that "our body is nothing but the fundamental phenomenon, to which, as condition, the entire faculty of sense, and herewith all thinking, relates itself in the present state"; that "the separation from the body is the end of the sensible use of our faculty of knowledge and the beginning of the intellectual"; and that, "If we were to perceive ourselves and things as they are, we should see ourselves in a world of spiritual natures." If, now, timeless knowing can belong, as Kant elsewhere teaches,[1] only to the Primitive Being, then the end of our sensible existence is to be regarded as a return to God, and our eternal or purely spiritual life as a life in God. With sensuous thought all sensuous appetites must have disappeared, and thereby that need of purification, on account of which Kant in his practical doctrine of immortality demanded the endless duration of our personal existence. Then purity would not constitute the problem and goal, but the condition and character of immortal life. Schopenhauer rejects, along with the Kantian theism, the doctrine of immortality which is expounded in the "Critique of Practical Reason" as coinciding with the doctrine of retribution. He affirms the immortality of our being on the ground of the "Transcendental Æsthetic." He says: "Would one demand, as has so often happened, the permanence of individual consciousness, in order to couple with it reward or punishment in a future world, it would in fact only be a question of the compatibility of virtue and selfishness. But these two will never embrace each other; they are diametrical opposites." "The adequate answer to the question of the permanence of the individual after death lies in Kant's great doctrine of the *ideality of time*, which proves itself just here especially fruitful, since, by a thoroughly theoretical, yet well elucidated insight, it makes compensation for dogmas, which lead on the one hand as well as on the other to absurdities, and thus at a stroke does away with the most prolific of all metaphysical questions. Beginning, end, permanence, are notions which borrow their significance solely from time, and consequently are valid only under the presupposition of the latter. But

[1] Cf. *supra*, The Thing-in-itself.

time has no absolute existence, nor is it the sort or mode of being *per se* of things, but merely the form of our *knowledge* of our own existence and of that of all things; and precisely on that account it is very incomplete, and limited to mere phenomena."[2]

Since, now, it is absolutely impossible for our reason as at present constituted to form for itself an idea of the state of timeless being and knowing, we must conclude that we cannot know anything in the least of the life after death. It is desirable to note, therefore, that Kant expressly declares that his hypothesis is not intended to defend the dogma of immortality, but only to combat the opponents of the dogma. Yet it remains very noteworthy that Kant chose, as best illustrating the "hypotheses of pure reason" which he permitted and justified for polemical use, precisely this doctrine—the doctrine, namely, which exhibits our present existence as a mere phenomenon or sensuous idea of our eternal and intelligible life. If we compare the Kantian doctrine of immortality as expressed in this hypothesis of pure reason with the same doctrine as a postulate of the practical reason, we see that eternal life is there conceived as timeless, supersensible, and purely spiritual; here, on the contrary, as temporal, hence sensible, and needing purification; there it is regarded as completion, which we are to conceive as a life in God; here, on the other hand, as an endless process of moral purification, subject to divine retribution. According to the first conception, our eternal life is independent of time and space. What is called the state of the soul after death is, for our present faculty of knowledge, *mysterium magnum*. And "the tiresome query: *When? Where?* and *How?*" is herewith forever silenced, since it is now senseless and absurd, seeking timeless and spaceless existence in time and space. But, according to the second conception, the soul is to continue its existence after death, is to experience a series of progressive states of purification, hence is to live on in time and the sense-world; at a definite period of time it must leave the body, seek a new place of abode, take on a new form of life; and since all this can only take place in space and time, in the every-day world about us might it not seem that, with ordinary sagacity, we ought to be able to detect its hidden way? The *knowledge* that the great Beyond must ever re-

[2] A. Schopenhauer: "Die Welt als Wille und Vorstellung," vol. ii, fifth edition, p 564. Cf. his "Parerga und Paralipomena," vol. ii, fourth edition, § 137.

main an unfathomable mystery to us is now no longer our possession, and we stand helpless, like Mephistopheles before the corpse of Faust:

> "Und wenn ich Tag und Stunden mich zerplage,
> Wann? Wie? und Wo? das ist die leidige Frage."[1]

THE PHILOSOPHY OF PESSIMISM.

BY ELLEN M. MITCHELL.

Never was the question, Is life worth living? discussed from such various standpoints as at the present time. It is not a new question, but the repetition of an old one, transferred from the Orient to this Western world. There have been pessimists always, but pessimism was never placed on a metaphysical basis, and formulated into a system of philosophy, until this century. A pessimistic strain may be found in the literature of all ages—from the complaints of Job and the words of the preacher in Ecclesiastes to the pathetic melancholy of Shelley and Byron, of Heine and Lamartine, and of the Italian Leopardi. But it is a part of the poet's endowment to feel deeply the sadder words of humanity, and to give them fitting and powerful expression. The evil which he recognizes is subjective rather than objective, a shadow falling athwart the sunshine of life, not the substance out of which it is made.

Pessimism, as a philosophic doctrine, is something different from this; it not only accepts evil as a fact, but seeks to explain its genesis and devise a scheme for its annihilation. Schopenhauer is its chief exponent in modern times, and nothing is more wonderful, as M. Caro has said, than this renaissance of Buddhistic pessimism in the heart of Prussia. That three hundred millions of Asiatics should drink, in long draughts, the opium of these fatal doctrines which enervate and stupefy the will, is extraordinary enough. But that an energetic, disciplined race, so strongly con-

[1] "And though I fret and worry till I'm weary,
When? How? and Where? remains the fatal query."
TAYLOR'S *Translation.*—FAUST, Part II, Act V, Scene VI.

stituted for knowledge and for action, should welcome with enthusiasm the theories of despair revealed by Schopenhauer, seems at first inexplicable. Their sinister influence has spread throughout Germany, and has borne fatal fruit in the nihilism of Russia. In Italy, the poet Leopardi was their prophet and precursor.

That the views of Schopenhauer were colored by his own peculiar temperament and the circumstances of his life cannot be doubted. His pessimistic system was rooted in the fibres of his own gloomy nature, though a vigorous intellect gave it form and coherence. He inherited from his father certain morbid tendencies, and "loved to brood over human misery," says his mother. She frankly confesses that she finds it difficult to live with him, and that the better she knows him the more the difficulty increases. "Your ill-humor," she writes, "your complaints of things inevitable, your sullen looks, the extraordinary opinions you utter like oracles none may presume to contradict—all this depresses and troubles me without helping you. Your eternal quibbles, your laments over the stupid world and human misery, give me bad nights and unpleasant dreams." When he presented her a copy of his first book, entitled "On the Fourfold Root of the Doctrine of Sufficient Reason" (*Die vierfache Wurzel des Satzes zum zureichenden Grunde*), she pretended to think it was a treatise for apothecaries! She was an authoress herself, and had just published a volume of travels. Schopenhauer retorted by assuring her that his book would be sold when even the lumber-room would not contain a copy of hers. "But the whole edition of yours will still be on hand," was her final shot. What a strange domestic picture and commentary on the relation between mother and son! Schopenhauer was not a lovable or attractive character. He was cowardly and distrustful. The slighest noise at night made him start and seize the loaded pistols ever at his side. He would not trust himself to be shaved, and was so afraid of poison that he always carried with him a leathern drinking cup. "It is safer trusting fear than faith," he said.

The first volume of his great work, "Die Welt als Wille und Vorstellung," was published in 1819, but received little recognition. It contains the basis and explanation of his pessimism. Its fundamental thesis is as follows: All is will in nature and in man, hence all is suffering. One must understand what Schopenhauer

means by Will in order to interpret his philosophic system. Will, as he uses the word, is without moral significance; it is force, "the ultimate and onward-moving spring of all things." At first it is a blind, unconscious impulse awaking in the depths of eternity, and struggling forward through all the lower grades of existence until it reaches human consciousness. This, according to Schopenhauer, is the supreme stage of misery. The animal has feeling, and therefore suffers, but man alone *knows* that he suffers. Human life is a continual struggle for existence with the certainty of being vanquished. To live is to will; to will is to suffer. For will is striving, and striving is necessarily suffering. "All striving springs out of defect or discontent with one's condition, and is, therefore, suffering until it is satisfied." No satisfaction is enduring; it is only the starting-point for a new striving. Suffering is implied in development, because development springs from unrest and dissatisfaction. Pleasure is negative, suffering is positive. "We feel pain," says Schopenhauer, "but not painlessness; we feel care, but not freedom from care; fear, but not security. The wish is like hunger and thirst; when it is fulfilled, it ceases to exist for our sensibility. Only pain and want can be felt positively; pleasure and happiness are simply negative. The three greatest goods of life—health, youth, and freedom—are not appreciated by us until they have passed out of our possession." "Human life," he continues, "oscillates between pain and *ennui*, its two ultimate elements." Misery is the law of being, and the higher the being the greater the misery. The sensibility to pain increases with civilization. The progress of humanity is the progress of suffering; the world is growing worse instead of better.

Is there no escape from the gulf of wretchedness into which Schopenhauer plunges the doomed race of man? Is there no way of deliverance from the evil of existence? He proposes first some provisional remedies that lessen but do not destroy the evil. Through their instrumentality the unhappy slave of life can emerge for a moment "out of the endless stream of willing," and, forgetful of self, attain a certain degree of freedom and serenity. In the delight that comes to us from the contemplation of beauty in nature or art, the mind is free from will, from effort, from desire, from suffering; dead to itself, it participates in the absolute, in the eternity of the idea. It matters not whether one views a

sunset from the windows of a prison or of a palace, so far as delight in its beauty is concerned. The accidents of this transitory life, the rôle that one plays, and the daily torment that one suffers, are forgotten; the mind rises into a purely ideal realm where there are neither prisons, nor prisoners, nor princes, nor palaces. But this condition is momentary, and cannot be prolonged; it is opposed to the very nature of will. It is also limited to a few chosen ones, and offers little consolation to the great mass of humanity. Another remedy must be sought for the universal evil of existence. Schopenhauer finds it, like the Buddhist, in the absolute negation of desire, the cessation of will. Death does not solve the problem. The suicide that one must commit is moral, not physical; it is not life, but the will to live that must be destroyed. After struggling through all the grades of inorganic and organic nature as a blind unconscious desire of life, the will reaches consciousness of itself in the human brain, and must face the alternative that is to determine its destiny, its eternal misery or final repose; the affirmation or the negation of desire. Not only his own future depends on the decision of man, but the future of the universe. It is from him that nature awaits her redemption; he is at once the priest and the victim.

But how is this redemption to be accomplished? How is the will to rise above its own blind impulsive nature and work out the annihilation of desire? Schopenhauer answers as Buddha answered: Through the effects of love and pity. The individual must be carried out of himself, must cease to draw an egoistic distinction between himself and others, must enjoy their pleasures as he enjoys his own, must suffer from their sorrows as he suffers from his own, must seize the being of the universe, and acknowledge the nothingness of all struggle. In this way he attains to resignation, a state of voluntary renunciation, the negation of the will to live. Virtues are only virtues in so far as they are direct or indirect means of self-renunciation; morality is simply a gradual extinction of all forms of desire, a persevering immolation of the will that causes existence, and finally a philosophic negation of existence itself. "Pity," says Schopenhauer, "is an astonishing fact that effaces the line of demarkation between the me and the not-me, so that the not-me becomes in some fashion the me."

One involuntarily compares the ethical theories of Schopen-

hauer with his injustice and brutality toward adversaries, with his chronic fury against human folly and an ungrateful public, with his misanthropy and distrust of mankind. There was a man preaching disinterestedness and self-renunciation whose own heart was eaten up with self-love. His philosophy, with the one exception mentioned, where his theories are at variance with his practice, reflects his own unamiable character. It is as brutal as its author in treating of woman and the passion of love. "The pessimism of Buddha is a pessimism of pathos," says a recent writer, "while that of Schopenhauer is one of despair. The one is a religion of sorrow, the other a philosophy of ill-humor with the world."

What are we to think of Schopenhauer's theory of will? Has his pessimism any ground in reason? Suppose life to be a ceaseless effort, as he assumes, might we not as well identify effort with enjoyment as with suffering? If we are essentially an activity, the manifestation of that activity is in perfect harmony with our nature; why, then, should it result in pain? "Effort in itself in a healthy organism is joy," says M. Caro, in a critical review of Schopenhauer's philosophy. An irresistible instinct, the instinct of life, impels man toward action. The pessimistic school misconceives this instinct, and declares that all action is suffering, that effort is a pain, and that work is a curse. It knows nothing apparently of the pure joy resulting from the possession of an energy that first conquers itself, and then conquers life in the face of difficulties and obstacles. Work, self-activity, is the true friend and consoler of man, raising him above his weaknesses, purifying and elevating his character, preserving him from temptations, and helping him to bear his burden even when it is heaviest. Aside from its results, concentrated and directed energy is the most intense of our pleasures, because it develops in us the sentiment of personality, struggling with obstacles, and triumphant over nature. What ground, then, remains for the pessimism of Schopenhauer if it can be proved that the action of will is not identical with suffering, but, on the contrary, is the source of our highest pleasures?

There is space to note but one other point in Schopenhauer's philosophy before passing on to the pessimism of Hartmann. The sentiment of love, that sentiment which is capable of being transfigured from an animal instinct into the most heroic and ideal

disinterestedness, is brutally misinterpreted by Schopenhauer. He knows nothing of its sacred purity and divine renunciations, whatever he may say of pity. He omits from his theories all that might soften and ennoble life, disclosing the narrowness and inferiority of that point of view which one must take in order to declare that life is *not* worth living.

Hartmann's pessimism resembles that of Schopenhauer so far as it is derived from an irrational unconscious impulse working through all things. He is classed by some critics as a disciple of Schopenhauer, by others as an independent investigator. It was in the nature of things, he tells us in his "Philosophy of the Unconscious" (*Philosophie des Unbewusten*), that the pessimism of Schopenhauer should find numerous disciples, but he is careful to explain that his own views are independent and original. Lack of self-esteem is not one of his failings any more than it was Schopenhauer's.

There are three possible forms of human illusion concerning happiness. It may be conceived as a good to be attained here upon earth by the actual individual; or as a good to be realized in a transcendental life after death; or, finally, as an impersonal good, the aim of the process of the world, the religion of humanity. Hartmann's attacks are directed chiefly against the first form of illusion. He asserts that every pleasure is in itself weak and transitory when compared with its corresponding pain. He takes the two instincts that are said to move the world—hunger and love—and compares their joys and miseries, declaring that the latter far surpass the former in duration and depth of intensity. After the savage treatment of love by Schopenhauer, and all the ill that has been said of it by the poets and cynics throughout the ages, it was reserved for Hartmann to group in one darkened mass all the woes and deceptions of the heart without a single ray of light to relieve the sombre picture.

The supposed advantages of human life he classifies as follows: those which correspond to a state of pure indifference, and are merely the absence of certain kinds of suffering, as health, youth, material comfort; those which are purely imaginative, as the desire of wealth, of power, the sentiment of honor; those which cause more suffering than pleasure, as hunger, love; those which rest on illusions that intelligence will dissipate, as self-love, piety,

hope; those which are clearly recognized as evils, but are accepted in order to escape worse evils, as work, marriage; those, finally, which procure more pleasure than pain, but which are bought at the cost of great suffering, and can only be shared by a few, as art and science. The world in itself is utterly hopeless, according to Hartmann. In spite of all reforms and increased intelligence, it is worse than ever. One might sum up his philosophy in the words "Curse God and die." No touch of compassion or human sympathy relieves the picture that he draws. It almost seems as if he felt a kind of cold joy in building up a logical system of thought that will shatter every human hope and trust. But it is time and labor lost; he fails to convince us that we ought to be miserable. He fails also in the balance that he draws between pleasures and pains. Their quality is the only point of view from which comparison is possible and quality cannot be reduced to a mathematical formula. There are moments of happiness so intense that one would give for them a lifetime of misery; there are griefs so bitter as to darken and overwhelm all compensating joys. There is a subjective element of appreciation in pleasure and pain that cannot be measured by any external standard. One man, strong and healthy, delights in activity, in the exercise of his will, in fighting against obstacles; another, timid and in delicate health, shrinks from conflict and seeks repose. Who is to decide whether the one state or the other is in itself absolutely a pain or a pleasure? From your standpoint my life may be miserable, but what do I care if from mine it is happy?

Schopenhauer and Hartmann both neglect the real gist of the matter, the absolute value of life in and for itself. If Kant is right, if the world has only one explanation and one aim, if life is a school of experience and of work where man has his task to fulfil outside of the pleasure he may take, if this task is the creation of moral personality through the exercise of will, the point of view changes, and the theories of pessimism are radically false.

The idea of the Unconscious plays a similar part in Hartmann's philosophy to that of the Will in Schopenhauer's, though it would be difficult to explain what is meant by it, or how it can be unconscious and at the same time endowed with wisdom and intelligence. Hartmann represents it as the substance out of which the world is made, and as the all-pervading power that guides its pro-

cess. Misery is the only result of its evolution, and, when at last the misery culminates in human consciousness, there is but one way of deliverance open, the suicide of the universe, to be achieved, strangely enough, through moral conduct and the universal will of humanity. This is Hartmann's solution for the evils of life, "cosmic suicide," "humanity hurling back into nothing the world process." Could anything be imagined more fantastic or bizarre? Its jaunty affectation is wholly different from the gloom of Schopenhauer, which has at least the merit of reality, and gives a certain dignity to his pessimistic theories.

The question remains: What is the future of pessimism? In order to answer it, we have but to compare its doctrines with the nature of the human will and of human activity. We have but to see how it contradicts itself, how it distorts and misinterprets the purest and highest of all spiritual forces—love, the power of self-sacrifice. Standing half way between realism and positivism, pessimism merely proves how impossible it is to banish from thought that Divine Idea of the Absolute which has been the strength and consolation of man throughout the ages. As a philosophic system, pessimism may from time to time exert a momentary influence in the world's history. But it will not endure; the duties of each day, useful and necessary activity, will dissipate its evil dreams and save humanity. The question is not simply one of happiness and misery, but of right and wrong. Philosophy must observe this distinction, or, failing to satisfy our highest needs and aspirations, it will lead to spiritual sterility and spiritual death.

ON THE SYMBOLIC SYSTEM OF LAMBERT.

BY JOSEPH JASTROW.

Joh. Heinr. Lambert (1728–1777) was a logician of no mean rank, as his influence on German thought has shown; it was he whom Kant called "der unvergleichlicher Mann." His first logical work was "Neues Organon oder Gedanken über die Erforschung und Bezeichnung des Wahren und dessen Unterscheidung vom

Irrthum und Schein" (Leipzig, 1764); this was followed by an article in the "Nova Acta Eruditorum," in 1765. His later writings are, "Anlage zur Architectonik" (1771); "Logische und philosophische Abhandlungen" and "Deutscher gelehrter Briefwechsel," both published posthumously in 1781. I have only had access to the "Neues Organon," and the object of this note is to review his system as there set forth. I have availed myself of Mr. Venn's copious notes (Symbolic Logic); Hamilton (Lectures on Logic) and Thomson (Laws of Thought) also have some references.

The opening chapter of the second volume contains Lambert's general idea of a symbolic system, under the title "Von der symbolischen Erkenntniss überhaupt." The origin of symbolism is in language. The different languages are so many symbolic systems. Each word must be a symbol of something; if this is not so, there results, not knowledge, but a word-cram. The ideal system is one in which the signs of the concepts and the things perfectly correspond, so that one can be put for the other. For this it is necessary that the relations involved by the things should also be involved in the signs. Music-notes, the points of the compass, the signs of the zodiac, those of astronomy (° ′ ″), of chemistry, etc., etc., are examples of symbolic methods. Arithmetic, however, is a more remarkable one: "For it is no small thing to express by means of ten figures—or in the Leibnitzian 'Dyadik, of two—all possible numbers, and to perform all calculations, and that too, in such a mechanical way that it can be done by machines, such as Pascal, Leibnitz, Ludolf, and others have invented. In this we reduce the theory of the things to that of the signs; and we are so used to this that the numbers soon come to be regarded as nothing but signs, while in fact they are concepts of relations" (§ 34). Algebra is the most perfect system, because its own theory is a symbolic art. For "if you reduce a problem from another science to an algebraic one, you can abstract from the former, and the solution of the algebraic problem will also be that of the other. There are two kinds of symbols in algebra, the letters of the quantities and the operation symbols for expressing relations; the one is an "Allgemeine Zeichenkunst," the other "Verbindungskunst der Zeichen." The introduction of the latter, says Mr. Venn, marks the real turning-point in symbolic logic. Lambert conceives the object of this art to be the determination of possible combinations,

the degree of their validity, of their mutual relations, and the laws of their interchange, etc. (§ 41).

Symbols are either natural or artificial; smoke as a sign of fire, the symptoms of a disease are natural signs; the tolling of bells an artificial one. Ordinary symbols are more or less arbitrary; mere imitation may be the natural element. Even in algebraic equations we can introduce the conception of a pair of scales with equal weights on its arms.[1] What the signs do not of themselves indicate, the doctrine about them must show; and the signs will be the more complete the closer they follow the fact. Signs are more scientific, however, the better they mark the conditions, etc., determined by the things themselves which the sign marks. Thus, in algebra, the problem, when completely solved, tells not only what the answer is, but all the circumstances, whether more answers than one, what data are superfluous or wanting, and, if the solution is impossible, tells where it begins to be so, and so on.

Let this suffice to show that Lambert had worked out a theory of symbolism, both interesting and valuable, and that his system of logical notation, being comprehended, like that of Leibnitz, under this more general symbolism, could not fail to be related to that other important symbolic system, mathematics. Lambert's logical system is extremely complete and original. He recognizes the importance of the natural element (for on this he bases the distinction of the four figures of syllogism); he lays stress on the importance of induction and of the theory of probabilities, and has himself worked out the elementary departments of each. Speaking in general of symbolic logic, Mr. Venn says: "To my thinking, he and Boole stand quite supreme in this subject in the way of originality; and, if the latter had knowingly built on the foundation laid by his predecessor instead of beginning anew for himself, it would be hard to say which of the two had actually done the most" (p. xxxii, *op. cit.*). Hamilton's verdict is in singular opposition. After enumerating eight objections (with one exception these objections stated are to be either (1), misconceptions of Lambert; or (2), matters of opinion in which a great deal can be said for Lambert; or (3), Hamiltonian peculiarities), he

[1] Is it not just such conceptions and illustrations which are so valuable for educational purposes? To reduce to terms of sight what is expressed in terms of thought is the germ of this symbolic procedure.

words the ninth thus: "Lambert—but it is needless to proceed. What has already been said shows that Lambert's scheme of linear notation is, in its parts, a failure, being only a corruption of the good and a blundering and incongruous jumble of the natural and conventional. The only marvel is, how so able a mathematician should have propounded two such worthless mathematical methods. But Lambert's geometrical is worse even than [his] algebraic[1] notation" (p. 668, *op. cit.* New York, 1809). To Hamilton "mathematical" and "worthless" seem almost identical in the system of Logic. Mr. Venn's criticism of Hamilton's scheme is this (p. 432): "It has been described (by himself) as 'easy, simple, compendious, all-sufficient, consistent, manifest, precise, complete, the corresponding antithetic adjectives being freely expended in the description of the schemes of those who had gone before him. To my thinking, it does not deserve the rank as a diagrammatic scheme at all, though he does class it with the others as 'geometric;' but it is purely symbolical. What was aimed at in the methods above described was something that should explain itself, as in the circles of Euler, or need but a hint of explanation, as in the lines of Lambert. But there is clearly nothing in the two ends of a wedge to suggest subjects and predicates, or in a colon and comma to suggest distribution and non-distribution." Every diagrammatic scheme must be somewhat symbolic; it is all a question of degree and of naturalness, and in both these respects Hamilton's goes beyond the boundaries of legitimacy.

Lambert's first notation was the linear, and of that I will give some account. Every notion has some extension. Let a series of dots denote individuals, and the line will denote the notion (vol. i, p. 110). The relative length of the lines is not entirely arbitrary; the real length is. If our knowledge were more perfect, these lengths would be more definite. This perfection is, however, ideal. To this Mr. Venn objects (*op. cit.*, p. 430). "Thus Lambert certainly seems to maintain that in strictness we must suppose each line to bear to any other the due proportionate length assigned by the extension of the terms." But Lambert's "in strictness" means in an ideal world where we had perfect knowledge. That for us the lengths of these lines are entirely arbitrary, he dis-

[1] It should be said that Mr. Venn treats almost entirely of the algebraic notation.

tinctly says. The "due proportionate length" has also no reference to feet and inches. It means that, if we compare A and C with B, B is a sort of a standard for A and C, and if A is found to contain B, and B to contain C, their relative lengths are determined. Mr. Venn adds: "In the latter part of the "Neues Organon"—where he is dealing with questions of probability, and the numerically, or rather proportionately, definite syllogism—the length of the lines which represent the extent of the concepts becomes very important. So little was he prepared to regard the diagram as referring solely to the purely logical considerations of presence and absence, of class characteristics, of inclusion and exclusion of classes by one another." I cannot find any diagrams in the chapter on Probability that present this feature; if he had used diagrams, he would have done what Mr. Venn objects to. But the proportionately definite syllogism and probability are not purely logical considerations, and what the length of the lines would denote would not be a logical but a mathematical conception. To this I can see no objection.

Lambert[1] expresses "All A is B" by B———b / A———a, or ....B———b..... / A———a, in the former case B is definite, in the latter not. We can write the converse thus, A———A / ...B———b.....' showing that it is undetermined whether "all B is A," but that surely "some B is A." But we need no separate diagram for the converse; we drop the distinction of subject and predicate and read the diagram in any order. The metaphor here is that of one concept being conceived under another. Of course, this is little more than a play upon words; Lambert regards it just as he does the idea of a pair of scales for the equation. "No A is B": A———a B———b, or ...A———... ...B—b... if indeterminate; and the converse is evidently true, No B is A. Some A is B. B———b / ..... A ....., in which it is undetermined whether All A is B or All B is A. It may be written ....B———b.... / .....A——a.....', and sometimes B——b / ...A———a..., the last pointing to a Univ.

[1] Vol. i, p. 112, *sqq.*

Aff. as the converse. "Some A is not B": $\overset{B\text{———}b}{\ldots.A\ldots.}$.

It may be $\overset{B\text{———}b}{\ldots.A\text{—}a\ldots.}$ or $\overset{B\ldots\ldots.}{A\text{——}a}$. Here I must dispute a statement of Mr. Venn (*op. cit.*, p. 431). Speaking of the employment of dotted lines to express indeterminateness, he says: But when he comes to extend this to particular propositions, his use of dotted lines ceases to be consistent or even, to me, intelligible. One would have expected him to write "some A is B" thus, $\overset{B\text{———}\ldots\ldots}{A\text{———}\ldots\ldots}$, for, by different filling in of the lines, we could cover the case of there being "B which is not A," and so forth. But he does draw it $\overset{B\text{——}}{A\ldots\ldots\ldots}$, which might consistently be interpreted to cover the case of "no A is B," as well as suggesting the possibility of there being "no A at all." Lambert does give the form that one would expect him to give, and he does not give the other; for he expressly says that, by putting the letter A under B, we are sure of having at least one individual A which is B. You have no right to put the A outside of B. These forms, says Lambert, show not only the necessary differences between two propositions, but also how far the converse is true, and how far true when conditions are changed, and how determinate the conclusion is. There is no necessary order of the lines nor of subject and predicate. If a genus A has three species, B, C, D, we would write $\overset{A\text{———————————}a}{B\text{———}b\ C\text{———}c\ D\text{———}d}$ where the lengths of the lines are arbitrary. Disjunctives cannot be expressed at all, since they tell nothing positive. A is either B or C. This only says "No B is C." Conjunctives can be written: A is B and C $\overset{\ldots.C\text{———}c\ldots\ldots}{\ldots.B\text{———}b\ldots.\ \ A\text{—}a}$, which shows that A is B as well as C, that some B is C and some C, B. The copulative A, as well as B is C, can be written in two parts, thus: $\overset{C\text{———}c}{A\text{——}a}$ $\overset{C\text{———}c}{B\text{—}b}$. If we write both under one line, we do not know whether to put them beside or above another. $\overset{C\text{———}c}{B\text{——}b}$ or $\overset{}{A\text{—}a}$

C———c
B—b or C———————c, where all, some, and no A is B.
.... A ....

If we know this we can select our form.

....P———P....
Barbara will be M——M , which gives—(1) Some
S—S

M is S; (2) some P is M; (3) some P is S; (4) all S is P. The problem is, whether, by drawing the lines representing the premises, you condition the lines representing (not one, but) all the conclusions. He then develops all the moods and figures according to this scheme; but it would be tedious to follow him there. There are several objections to this scheme; one, Lambert himself has pointed out, viz., that it cannot represent disjunctives. How to represent disjunctives diagrammatically, I do not know. Let us approach the question this way: every diagrammatic system is intimately connected with the material view of logic. If every logical expression stands for a state of affairs, why should that state of affairs not be capable of being diagrammatically expressed, or, so to speak, painted? The answer is evident. A is either B or C does represent a state of affairs, but one in which the subjective element is not entirely eliminated. It is the ball in the air which is going to fall on one of two places, *I* don't know which. In point of fact, objective causes have settled on what spot the ball is going to fall, but I am in doubt; and doubt is subjective. Lambert expressed his reason thus: that, after putting B and C aside of each other, you have nothing but a conditional to tell you whether to put A under B or under C. Another difficulty is to make "Some A is B" and "Some A is not B" perfectly distinct. This Lambert does by the position of the letter A and the dots as marks of indeterminateness, which latter is symbolic rather than diagrammatic. There is, however, no objection to this, *per se*. But it leads to a plurality of forms, according to the different ways of filling out the dots, which is confusing. Hamilton[1] accuses him of making one diagram answer for two syllogisms. Thus, he says, Datisi, Disamis, Bocardo are the same. The only difference between Disamis and Datisi is in the order of the premises; and this Lambert properly expresses by the different positions

[1] P. 670.

of B and C. That Bocardo is the same is one of Hamilton's mistakes. Lambert gives Disamis $\begin{matrix} B\text{———}b \\ M\text{——}m \\ \ldots C\ldots\ldots \end{matrix}$, and Bocardo $\begin{matrix} B\text{———}b \\ M\text{——}m \\ C\ldots\ldots\ldots \end{matrix}$. Where the important difference is, that, in the latter case, it is determinate in one direction, and in that direction we find the M and the B, that is not C. It cannot be too strongly maintained that Hamilton's criticisms are very unjust. As I admitted before, these different positions of the dots are confusing. The chief value of the scheme is its completeness, and its strict adherence to the rule that the lines representing the premise determine the conclusion. Of more value still are the general principles of which this scheme is an outcome; besides, if his algebraical method is valuable, this borrows some of its worth, since it is in this that the germs of the former are to be found.

It would seem that, since Lambert gives up the distinction of subject and predicate, he ought also to neglect the figures, and formally he does. But he claims that the distinction of figures is a natural one; they have different uses, and each has its dictum. For the first figure: *Dictum de omni et Nullo.* What is true of all A, is true of every A. For the second figure: *Dictum de Diverso.* Things which are different are not attributes of each other. For the third figure: *Dictum de Exemplo.* When we find things A which are B, in that case some A are B. For the fourth figure: *Dictum de Reciproco.* I. If No M is B, then no B is this or that M. II. If C is [or is not] this or that B, in that case some B are [or are not] C.[1]

Let us follow out another part of Lambert's Logic which is intimately connected with his later doctrines. Starting from the fact that from two particulars no conclusion follows, he notes that, if the "some" is the same "some" in both, we get a conclusion; for then we really have, not an indefinite some A, but a new term, mA. On this principle we treat singulars as universals, because

[1] I should add Thomson's note (p. 173, *op. cit.*). "But Mr. Mill is in error, shared by Buhle (Geschichte, vi, 543), and Troxler (Logik, ii, p. 62), in thinking that Lambert invented these dicta. More than a century earlier Keckermann saw that each Figure had its own law and its peculiar use, and stated them as accurately, if less concisely than Lambert. Keckermann, however, ignored the 4th Figure, and Lambert's explanation of that may be new.

they are perfectly definite, e. g., "The earth is inhabited," "the earth is a planet .·. (at least) one planet is inhabited." He completes his scheme by considering the effect of one premise being false. In his chapter on problems there is much of interest. If all A are B then also mA are B, and all mA will be mB. All triangles are figures; all right-angled triangles are right-angled figures. But can you get A is B from mA is mB, as well as mA is mB from A is B (a step analogous to multiplication in algebra)? You can get mA is B, but whether m can be dropped from the subject is another question. If our language were strictly logical, we could. We sometimes conclude that all mA is m, neglecting the principal notion B. If you have mA is nA, you can get mA is n, but it is uncertain whether n belongs to A or m or mA. Then follows an interesting study of the method of generalizing problems. His problems are solved mostly by the means of the identity A is A, and the principle that mA is m and mA is A; they are mostly theoretical, bearing on the relation between data and quæsita. I will close this very brief sketch by summing up his chapter on Probability. A is $\frac{a}{b}$B means that A has $\frac{a}{b}$ of the marks of B. $\frac{a}{b}$A is B means that $\frac{a}{b}$ of the A's are B's. A$\frac{a}{b}$ is B means that the probability is $\frac{a}{b}$ that A is B. A simple case is $\left.\begin{array}{l}\frac{a}{b}\text{A are B}\\ \text{C is A}\\ \therefore\ \text{C}\frac{a}{b}\text{ is B}\end{array}\right\}$, which shows where the probability comes in, and how much it is. If we have the second premise, all C is A, the conclusion will be, all C$\frac{a}{b}$ are B; if some C is A, then the conclusion will be indefinite; if the some is definite, we have $\left.\begin{array}{l}\frac{a}{b}\text{A are B}\\ \frac{c}{d}\text{C are A}\\ \frac{a}{b}\frac{c}{d}\text{C are B}\end{array}\right\}$. In all these cases, the probability of the conclusion arises from the major premise. We will now consider the case in which it arises from the minor premise. M N P Q are marks of B, then B is M N P Q. Now C is M N P, then probably C is B. If the marks M N P Q = A, and M N P = $\frac{a}{b}$A, then we have All A is B, C is $\frac{a}{b}$A .·. C$\frac{a}{b}$ is B. The next form is obtained by compounding these two: $\left.\begin{array}{l}\frac{a}{b}\text{A are B}\\ \text{C is }\frac{a}{b}\text{A}\\ \therefore\ \text{C}\frac{1}{2}\text{ is B}\end{array}\right\}$. If we make the major negative, we would have $\frac{1}{b}$A are not B. C is $\frac{a}{b}$A .·. C$\frac{1}{b}$ is not B. Then $\frac{1}{2}$C are B, $\frac{1}{b}$ are not B, and the other $\frac{1}{b}$ are undetermined. We see all along how carefully he

distinguishes between probability of intension and of extension. The intension probability becomes the formula for induction. Let *a* be the affirmative, *e* the negative, and *u* the undetermined part of the probability, then we would have a case such as this: $(\frac{8}{8}a+\frac{1}{4}e+\frac{1}{12}u)A$ are B; C is $(\frac{8}{8}a+\frac{2}{8}u)A$ ∴ $C(\frac{8}{8}a+\frac{3}{20}e+\frac{9}{20}u)$ is B; which means that, of 20 cases, C will be B 8 times, will not be B 3 times, and will remain doubtful 9 times; or in any one case there are 8 chances of finding the Ca B, 3 of not finding it aB, and 9 chances of its remaining doubtful. The multiplication is algebraic; remembering that anything containing *u* belongs under *u*, and that *ae* belongs under *e*. $\frac{4}{8}$ $A\frac{1}{3}$ is $\frac{8}{8}B$. $A\frac{1}{10}$ is B, because, when interpreted, they represent the same state of affairs. This sort of probable reasoning is not confined to two premises by any means. In general, if mA are B, nA are C. Where n > m, then (1) (n–m)A will be C but not B; (2) if m+n>1, then (m+n–1)A are B and C, or if m+n<1, then (1– n–m)A are neither B nor C. He develops this method, using figures and words, and applies it to the calculation of the probability of testimony, and so on.

If we view these doctrines in the light of recent logical ones, they lose a great deal of their value, but little of their interest. The doctrine that a particular cannot be obtained from a universal will invalidate many of his diagrams; and other results of more general methods render any such treatment superfluous. His merit consists in having so clearly grasped the principles on which all such investigation depends. But Lambert did not stop here. The "Neues Organon" was only his first work; and, according to Mr. Venn, all his best symbolic speculations are to be found in the later works, particularly the "Logische Abhandlungen." I will conclude by giving Mr. Venn's summary of Lambert's speculations as derived from the later works ("Symbolik Logik," p. xxxii, *sqq.*). "Summarily stated, then, Lambert had got as far as this. He fully realized that the four algebraic operations of addition, subtraction, multiplication, and division, have each an analogue in logic; that they may there be respectively termed aggregation [Zusammensetzung], separation [Absonderung], determination [Bestimmung], and abstraction [Abstraction], and be symbolized by +, —, ×, ÷.[1] He also perceived the inverse nature of the

[1] By mistake + is printed instead of ÷.

second and fourth as compared with the first and third;[1] and no one could state more clearly that we must not confound the mathematical with the logical signification.[2] He enunciates with perfect clearness the principal logical laws, such as the commutative, the distributive, and the associative,[3] and (under restrictions to be presently noticed) the special law[4] $AA = A$. He develops simple logical expressions precisely as Boole does,[5] though without assigning any generalized formulæ for the purpose.

"He fully understood that the distinctive merit of such a system was to be found in its capacity of grappling with highly complicated terms and propositions; and he accordingly applies it to examples which, however simple they may seem to a modern symbolist, represent a very great advance beyond the syllogism.[6] Moreover, in this spirit of generalization, he proposed an ingenious system of notation, of a 1 and 0 description, for the 2^n combinations which may be yielded by the introduction of n class terms or attributes.[7] Hypothetical proportions he interpreted and

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[1] "Die Operationen + und − sind einander entgegengesetzt und sie leiden einerlei Verwechselungen wie in der Algeber." ("Logische Abhandl.," ii, p. 62.)

[2] "Wir haben die Beweise der Zeichnungsart kurz angezeigt, die Zeichen selbst aus der Algeber genommen, und nur ihre Bedeutung allgemeiner gemacht." (*Ibid.*, i, 37.)

[3] "Da man in vielen Sprachen das Adjectivum vor- und nachsetzen kann, so ist es auch einerlei ob man nR oder Rn setzt." (*Ibid.* i, p. 150.) "Da es in der Zeichenkunst einerlei ist ob man a + b oder b + a setzt." (*Ibid.*, i, p. 33.) "Will man aber setzen (m + n) A, so ist dieses = mA + nA. Es sei m = n + p + q. Und A = B + C + D + E. So hat man mA = (n + p + q) (B + C + D + E). . . ."

[4] "Man kann zu einem Begriffe nicht Merkmale hinzusetzen die er schon hat . . . weil man sonst sagen könnte *eisernes Eisen*." (*Ibid.*, ii, p. 133.) The reason why he did not admit this law universally was (as presently noticed), that he endeavored to make his formulæ cover *relations* as well as common logical predications. This comes out clearly in the following passage: "Wenn der Begriff = α ist, $\alpha\gamma$ das Geschlecht, $\alpha\gamma^n$ ein höheres Geschlecht, $\alpha\delta$ der Unterschied, $\alpha\delta^n$ ein höherer Unterschied, $\alpha\gamma + \alpha\delta = \alpha$, die Erklärung $(\alpha\gamma + \alpha\delta)^n$ oder $\alpha\,(\gamma + \delta)^n$, eine höhere Erklärung," i. e., α being a true logical class-term $\alpha^n = \alpha$; but γ, being a relative term, γ^n does not $= \gamma$. (*Ibid.*, p. 133.)

[5] His formula is $a = ax + a\,|\,x$ (where $a\,|\,x$ means a not-x, viz., our $a\bar{x}$). He also has $x + y = 2xy + x\,|\,y + y\,|\,x$; just as Boole develops the expression.

[6] Take, for instance, the following: F :: H = S :: (P + G) :: V (A + C + Se) as expressive of "Die Glükseligkeit des Menschen besteht in der Empfindung des Besitzes und Genusses der Volkommenheiten des innerlichen und äusserlichen Zustandes." The sign :: here denotes a relation. (*Ibid.*, i, p. 56.)

[7] His scheme is this: Let 1 represent the presence and 0 the absence of the attribute. If we keep the order in which the terms stand in our expression unaltered, 10101 and 10111 will take the place of what we might indicate by $x\bar{y}zw\bar{v}$ and $x\bar{y}zwv$. He

represented precisely as we should.[1] Still more noteworthy is the fact, that in one passage, at least, he recognized that the inverse process marked by division is an *indeterminate* one.[2] These are the main truths of this kind which Lambert had seized. Whatever the defects and limitations in their expression, they represent a very remarkable advance on anything known to have been done before him. Where he mainly went astray was, I think, in the following respects: Though he realized very clearly that logical division is the inverse of multiplication, he failed to observe the indefinite character commonly assumed by inverse operations; that is, he failed to observe it except in certain special cases, as just pointed out.

"He regarded the inverse as being merely the *putting back* a thing, so to say, where it was before,[3] and accordingly omitted altogether that surplus indefinite term yielded by logical division, and which is so characteristic of Boole's treatment. Probably no logician before Boole (with the very doubtful exception of H. Grassmann) ever conceived a hint of this, as not many after him seem to have understood or appreciated it. As a consequence of this, Lambert too freely uses mathematical rules which are not justifiable in logic. For instance, from $AB = CD$ he assumes that we may conclude $A : C = D : B$.

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then compares the extent to which various complex terms thus agree with each other or differ. He also employs the slightly more convenient notation of letters and their negation, thus: ABC, AB0, A00, and so on, to stand for our ABC, $AB\bar{C}$, $A\bar{B}\bar{C}$. (*Ibid.*, ii, 134.) Of course there are great imperfections in such a scheme."*

[1] "Die allgemeinste Formel der hypothetischen Sätze ist diese, wenn A ein B ist, so ist es C. Diese Formel kann allezeit mit den folgenden verwechselt werden; alles A so B ist ist C. Nun ist alles A so B ist = AB. Folglich, alles AB ist C. Daher die Zeichnung $AB > C$ oder $AB = mC$." (*Ibid.* i, 128.)

[2] "Wenn $x\gamma = \alpha\gamma$, so ist $x = \alpha\gamma\gamma^{-1} = \alpha\frac{\gamma}{\gamma}$. Aber deswegen nicht allezeit $x = \alpha$; sondern nur in einem einzigen Falle, weil x und α zwei verschiedene Arten von dem Geschlecht $x\gamma$ oder $\alpha\gamma$ sein können. Wenn aber $x\gamma = \alpha\gamma$ nicht weiter bestimmt wird, so kann man unter andern auch $x = \alpha$ setzen." (*Ibid.*, i, 9.) (As this expressly refers to relative terms only, it is not at variance with the note below, at p. 80.)

[3] "Auch ist klar dass man sich dabei Operationen muss gedenken können, wodurch die veränderte Sache in den vorigen Stand könnte hergestellt werden. Diese Wiederherstellung giebt demnoch den Begriff der reciproken Operationen, dergleichen im Calcul + und −, × und ÷." (*Ibid.*, ii, p. 50.)

* Judging from the extract in Johns Hopkins University Circular, No. 10, p. 131, this seems to be similar to Dr. Franklin's scheme.

"Another point that misled Lambert was the belief that his rules and definitions would cover the case of *relative* terms.[1] . . . I think it a mistake to endeavor thus to introduce relative terms; but, if we do so, we must clearly reject the law that $x^2 = x$, in the case of such terms.

"In thus realizing what Lambert had achieved, the reader must remember that he by no means stood alone. Two of his friends or correspondents—Plonquet and Holland—are worthy coadjutors; and such logical writings as they have left behind are full of interesting suggestions of a similar kind. . . . These men all took their impulse from Leibnitz and Wolf."

GIORDANO BRUNO.

TRANSLATED FROM HEGEL'S "HISTORY OF PHILOSOPHY," BY EDWIN D. MEAD.

Giordano Bruno was one of those restless, troubled, seething spirits, like Cardanus, Campanella, and Vanini, who appeared in Italy in the sixteenth century. He utterly rejected all the old catholic reliance on authority, and fell back boldly upon his own reason. His memory has been revived in these later times by Jacobi, who appended an extract from one of Bruno's works to his "Letters on Spinoza." Jacobi drew special attention to him by his assertion that the sum and substance of his doctrine was the same as Spinoza's "One and All," or pantheism—a comparison which lifts Bruno to a position really above that to which he is justly entitled.

Bruno's life was perhaps a steadier and quieter life than that of Cardanus; but he, too, had no fixed abiding place in the world. He was born at Nola, near Naples, some time in the sixteenth century, the exact year not being known.[2] He became a Dominican monk, but quickly had occasion to speak out upon the gross

[1] "Unter den Begriffen M = A : B, kommen einige vor, die sehr allgemein sind. Dahin rechnen wir die Begriffe; Ursache, Wirkung, Mittel, Absicht, Grund, Art, Gattung." (Architectonik, i, 82.)

[2] About 1548.—TR.

ignorance and the wicked lives of the monks, besides expressing himself very sharply and bitterly upon many of the dogmas of the church, transubstantiation, the immaculate conception of the Virgin, etc.; and, while still young, he left Italy and commenced his life of wandering about the various European countries—France, England, Germany—teaching philosophy. First, in 1582,[1] he went to Geneva; but here he incurred the displeasure of Calvin and Beza, in the same way that he had incurred the displeasure of the Italian church authorities, finding it impossible to live with them. Then he resided in various French cities, Lyons among others, finally coming to Paris, where, in 1585, he made a formal stand against the Aristotelians, proposing for public discussion, according to the custom of the times, certain philosophical theses directed especially against Aristotle. These were published in 1588, under the title: "Jord. Bruni Nol. Rationes articulorum physicorum adversus Peripateticos Parisiis propositorum, Vitebergæ apud Zachariam Cratonem," 1588. His work, however, made no impression, the Aristotelians being still too firmly seated. Bruno also visited London, Wittenberg (in 1586), Prague, and other universities and cities. He was warmly favored and assisted by the Countess of Brunswick-Lüneburg at Helmstadt in 1589. Then he went to Frankfort-on-the-Main, where several of his works were printed. He was a wandering professor and author. At last, in 1592, he returned to Italy, lived undisturbed for a time at Padua, but was finally apprehended by the Inquisition at Venice, placed in confinement, and sent to Rome; and here, in the year 1600, refusing to retract what he had written, he was burned at the stake for heresy. He met his death, as Scioppius and other witnesses inform us, with the utmost fortitude and heroism.

Bruno had become a Protestant in Germany, and broken his vow as a monk. But among Catholics and Protestants alike his writings were pronounced heretical and atheistic, and were burned or somehow exterminated or concealed. His writings are therefore very seldom found together. The largest collection of them is in the university library at Göttingen; the most detailed account of them is to be found in Buhle's "History of Philosophy."

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[1] Others put it as early as 1577.—Tr.

The works are generally rare in libraries, often prohibited; in Dresden they still belong among the interdicted books, and are not shown. An edition of Bruno's Italian works has recently been prepared, though it may not yet be published.[1] He wrote very much also in Latin. In every place where he stayed for any length of time, he held public lectures and wrote and published books; the fact that his different books were published in so many different places is one reason why it is so hard to get full knowledge of them. Many of his works have essentially the same content, though in somewhat varying form; and in the evolution of his thought there does not appear any regular and definite advance. What chiefly and peculiarly impresses us in his sundry and manifold writings is the beautiful inspiration of a noble soul, that feels the indwelling of the Spirit, and sees the unity of its being and all being as the total life of thought. There is something almost bacchanalian in the way in which this profound consciousness takes hold of things; it seems to overflow, in order to become its own object and describe its own wealth. But it is only by science and in the form of science that the mind can produce and express itself as a totality; when this scientific culture has not yet been attained, the mind reaches about in and after all sorts of forms, without being able to reduce them to order. It is this unordered, multifarious opulence of thought which we find in Bruno. His expositions are often obscure, confused, allegorical and mystical, sometimes extravagant and wild. Many of his writings are in verse, and in these there is much that is fantastic—as when, in his book on "The Triumphal Animal," he says that something else had to be put in the place of the stars. Every personal interest was sacrificed to his great inspiration. This gave him no rest. It has been

[1] Bruno's Italian works, edited by Adolph Wagner, were published in Leipsic in 1830; part of the Latin works, edited by A. F. Gfrörer, in Stuttgart, in 1835. A complete edition is now in process of publication in Italy. A sufficient account of the Bruno literature may be found in the address by Thomas Davidson, published in "The Index," February 25 and March 4, 1886. Mr. Davidson's address is itself the most interesting, profound, and important word upon Bruno which has yet been written in America or England. We are informed in this that an exhaustive work upon the life and works of Bruno is now being prepared by a distinguished English scholar. In the brief account by Hegel, here translated, Mr. Davidson recognizes the first adequate appreciation of Bruno. "From Hegel's time, Bruno has become more and more a subject of interest, reverence, and study."—Tr.

said that he was "a restless soul, out of harmony with himself." Whence this unrest? He could not harmonize himself with the finite, the bad, the vulgar. Hence his unrest. He had annihilated this separation of self-consciousness and nature, which debases both alike, and raised himself to the one universal substantiality. Men thought of God as in self-consciousness indeed, yet as coming from without, as something opposed to it, as another actuality; of nature as made by God, his creation, but not his image. The goodness or providence of God was an external thing, displayed in certain narrow finite purposes. "The bees make honey," it was said, and we still hear it said, "so that men may be fed. Cork-trees grow so that we may have stopples for our bottles."

As to Bruno's thoughts themselves—Jacobi has presented them in such a form as to imply that the doctrine of one living Being, a World-soul, permeating all things, and constituting the life of all, was something peculiar to Bruno, a special distinction of his. Bruno asserted, first, the unity of life and the universality of the World-soul, and secondly, the present, indwelling Reason. But in this certainly he was very far from being original. The doctrine is nothing but an echo of the old Alexandrian doctrine.

Two things are prominent in Bruno's writings. In the first place, his system itself in its cardinal thoughts, his philosophical principles, the idea as substantial unity; and secondly, albeit this is connected with the former, his Lullian method or art, a special hobby with him, something on which he always laid the greatest stress—a method of discovering the distinctions in the idea, a matter of the greatest moment with him.

a. His philosophical thoughts, in which he makes use in part of Aristotelian conceptions, give evidence of a peculiar, excessively active and highly original mind. He is inspired by the thought of the life of nature, the divinity, the presence of reason, in nature. Generally speaking, therefore, his philosophy is certainly Spinozism, pantheism. This separation of men from God or the world, and all their relations of externality, are made an end of in the living idea of the absolutely universal unity of all things, for the expression of which Bruno has been so much admired. The main features of his exposition of his thought are his general definition of matter and his general definition of form.

a. He defines the unity of life as the universal, active Understanding (*νοῦς*), revealing itself as the universal form of the cosmos and containing all forms in itself. In its relation to nature it is like the human understanding, forming and systematizing the things of nature as the understanding forms and systematizes conceptions. It is the interior Artist, forming and fashioning matter from within. From the interior of the root or of the seed, it shoots forth the sprouts; from these it drives forth the branches, out of these the twigs, from the interior of the twigs the buds, leaves, blossoms, fruit. Everything is planned, prepared, and perfected from within. And so, too, this universal Understanding calls its juices back from the fruits and flowers to the twigs, etc. The cosmos is an infinite animal, in which all things manifoldly live and move. The formal understanding here is not different from final cause (design, the *entelechy*, the unmoved principle of Aristotle); although it is also, this producer, the active understanding (*causa efficiens*), the mediate cause. Nature and mind are not separate; their unity is the formal understanding, in which the pure conception is contained not as known, but as free for itself, abiding in itself, as well as active, going out of itself. Understanding working according to purpose is the very inner form of things. Whatever is produced is produced conformably to this principle and comprehended under it; everything is determined according to the determination of the form in itself. We find the same thought in Proclus. The understanding, as the true substantial, is that which contains all in its one; life is the proceeding, the producing; the understanding as such is this reflection or returning, this taking back of everything into the unity. In the Kantian philosophy, we come again to the consideration of this teleological principle or conception of purpose. Organic life, whose very principle is formative, which has its efficiency in itself, and in its working only abides by itself and maintains itself—this life itself is purpose, self-determined activity, not merely related as a cause to something else, but self-related and self-returning.

β. Bruno, thus immediately identifying final and efficient cause, and making purpose the immanent life of the universe, views this purpose or final cause also as substance. He sets himself entirely against the idea of an external, extra-mundane understanding. In

substance itself he makes the distinction of form and matter. Substance as the activity of the idea is the unity of form and matter—matter is in itself alive. The abiding, in the infinite transformations of being, says Bruno, is the first absolute matter; itself without form, it is the mother of all forms and that which is capable of all forms. It is not, indeed, without the first universal form, and hence it is itself principle or final cause in itself. Form is immanent in matter, the one simply not existing without the other; so that matter itself produces these transformations, and it is the same matter that is in them all. That which was first seed becomes blade, then corn, then bread, chyle, blood, semen, embryo, man, corpse, then earth again, stone, or something else; from sand and water come frogs. Here, then, is something which, although transformed into all these various things, remains in itself ever one and the same. This matter cannot consist of bodies, for bodies are formed; nor can it belong to what we call properties, conditions, qualities—for these things are changeable and evanescent. Nothing seems eternal and worthy of the name of principle except matter. Many, therefore, have held matter to be the only real, and all forms to be accidental. This error arises from men's failure to recognize any but the secondary forms; they do not recognize that necessary first and eternal form, which is the form and source of all forms. Matter, by reason of its identity with the performing understanding, is itself ideal (*intelligibel*), as the universal presupposition of all definite corporeity. It is nothing in particular—air, water, etc.—because it is everything—the abstract; it has no dimensions, because it has all. The forms of matter are the inner power of matter itself; it is itself, as ideal, the totality of form. This system of Bruno's is objective Spinozism; his thought penetrated very deeply.

Bruno here raises the question: "How are this original universal form and this original universal matter *united and inseparable*—different, and yet one?" In his answer he uses the Aristotelian forms of δύναμις and ἐνέργεια. Matter is to be conceived as potentiality; and thus all possible being comes in some way under the conception. The passivity of matter must be conceived purely and absolutely. It is impossible to ascribe existence to a thing which lacks the potency of existence. This actual existence has such express relation to the active mode that it is immediately

evident that the one cannot be without the other, but that the two reciprocally presuppose each other. If, therefore, there always existed a capacity to act, to produce, to create, there must always have existed a capacity to be acted upon, to be produced, to be created. The complete possibility of the existence of things (matter) cannot precede their actual existence, and no more can it remain beyond that actual existence. The first and perfect principle comprises all existence in itself, has the capacity or power to be all things, and *is* all things. In it active power and potentiality, possibility, and actuality, are united as one undivided and indivisible principle. This simultaneity of active power and passivity is a very important conception: matter is nothing without activity, form is the power and inner life of matter. If matter were merely undetermined possibility, how should we arrive at the determined? This simplicity of matter is only one moment of the form; in the very attempt to disengage matter from form, it is posited in one determination of form, which immediately involves the positing of the other.

The absolute is so determined for Bruno; not so other things, which can be and also can not be, which can be determined this way or that way. In these finite things, and in the finite determinations of the understanding, the distinction of form and matter is present. The individual man is in each moment what he can be in that moment, but not what he can be altogether and in point of substance. The things which appear as distinct are only modifications of a single thing, which comprehends in its existence all other existence. The universe, however, uncreated nature, is actually and at once all that it can be because it comprehends in itself all matter together with the eternal, unchangeable form of its changing modes. But in its developments from moment to moment, in its particular parts and conditions, its particular beings, its externality, it is not what it is and can be; but such particular part is only a shadow of the image of the first principle. Bruno wrote a book "De umbris idearum."

γ. This is Bruno's central thought. He says further: "The effort of reason is to recognize in all things this unity of form and matter. But, in order to penetrate to this unity, to explore all the mysteries of nature, we must scrutinize and study the opposite and conflicting extremes of things, the maximum and the

minimum." It is in these extremes that they are intelligible or ideal and united in the conception; and this union is the infinite nature. "To find the point of union, however, is not the greatest thing; out of this to develop also its opposite is the peculiar and the deepest secret of the method." This recognition of the development of the idea as a necessity of determinations is a great point; we shall presently see how Bruno did this. He conceives the first principle, elsewhere called the form, as the smallest, which is at the same time the greatest, as one, which is at the same time all; the universe is this one in all. In the universe, he says, body is not distinguished from point, centre from circumference, finite from infinite, greatest from smallest. There is nothing but centre —or the centre is everywhere and in everything. The ancients expressed this by saying of the father of the gods that he has his seat in every point of the cosmos. It is the universe which gives particular things true actuality, it is the substance of all things, is monad, atom, the spirit everywhere outpoured, the entire essence, the pure form.[1]

b. Bruno's second work is in connection with the Lullian art or method, so called after its inventor, the scholastic Raymond Lully—which art Bruno took up and improved, calling it his *ars combinatoria*. In one respect this art is similar to the *topic* of Aristotle, both giving a multitude of points and definitions, to be fixed in the mind as a table, with divisions and subdivisions, under which everything may be classified. Only Aristotle's *topic* was for the sake of taking hold of an object on its different sides in process of definition, while Bruno's aim was rather to facilitate the memory. He really joined the Lullian art to the art of mnemonics which prevailed among the ancients, which has been revived in recent times, and of which there is a detailed account in "Auctor ad Herennium" (Libr. III, c. 17, *sqq.*). One fixes in the mind, for instance, a certain number of departments, chosen as one pleases, say twelve, arranged in threes, and desig-

[1] Upon the antithesis of *maximum* and *minimum* Bruno wrote several special works, *e. g.*, "De triplici Minimo et Mensura, libri V, Francofurti apud Wechelium et Fischer, 1591;" the text is in hexameters, with notes and scholia; Buhle gives the title, "De Minimo, libri V." Another work bears the title "De Monade, Numero et figura liber; Item De Innumerabilibus, Immenso et Infigurabili: seu de Universo et Mundis, libri VIII, Francofurti, 1591."

nated by certain names, as Aaron, Abimilech, Achilles, Balaam, Bartholomew, Benjamin, etc. In these departments one arranges whatever one has to learn by heart, making a series of pictures of it, so that, in repeating it, it is not necessary to speak directly from memory, or the head, as we are wont, but to read it, as it were, from tablets. The difficulty lies in making a rational connection between the real subject of my thought and the picture; the combinations are generally most vicious, and the art is a bad one. Bruno himself soon abandoned it, because the thing of memory became the thing of imagination—which is a degradation. Inasmuch, however, as Bruno's table is not only a group of external pictures, but also a system of general determinations of thought, he certainly gave the art a deeper inner significance.[1]

a. Bruno comes to this art from the general ideas. Since everything is one life, one understanding, he struggles, with obscure presentiments of the truth, to grasp this universal understanding in the totality of its determinations, and subsume everything under it—to frame a *logical philosophy* based on this conception of the one life and understanding, and make it applicable to everything. He says that what philosophy has to consider is, the universe so far as it comes under the categories of the true, the knowable, and the rational. He distinguishes, like Spinoza, between the ideal thing of the reason and the actual. As the subject of metaphysics is the universal thing, which is divided into substance and accident, the highest requirement is a specific, more general art or method of so uniting the thing of reason and the actual thing, so grasping them in one conception and accrediting them as conform-

[1] Bruno composed many of these topic-mnemonic works, of which the oldest are the following: "Philotheus Jordanus Brunus Nolanus De compendiosa architectura et complemento artis Lullii, Paris. ap. Aeg. Gorbinum, 1582."—J. Brunus Nol. "De Umbris idearum implicantibus Artem quaerendi, etc., Paris. ap. Eund., 1582." The second part has the title: "Ars memoriae.—Ph. Jord. Bruni Explicatio XXX sigillorum," etc. "Quibus adjectus est Sigillus sigillorum," etc. It appears from the dedication that Bruno published it in England, therefore, between 1582 and 1585.—"Jordanus Brunus De Lampade combinatoria Lulliana, Vitebergae, 1587."—There, too, he wrote "De Progressu et lampade venatoria Logicorum, Anno 1587," dedicated to the Chancellor of the University of Wittenberg.—"Jordanus Brunus De Specierum scrutinio et lampade combinatoria, Raym. Lullii, Pragæ, exc. Georg. Nigrinus, 1588"; also printed in "Raymundi Lullii operibus."—Also "De imaginum, signorum et idearum compositione, libri III, Francofurti ap. Jo. Wechel. et Petr. Fischer, 1591."

able each to the other, that the manifold, of whatever sort, shall be restored to simple unity.

β. Bruno's principle here is the understanding—in the first place, the understanding acting outside itself, developing the sensible world. This fills the part in the illumination of the mind which the sun, in vision, fills for the eye—it illuminates the mass of objects which appear, not itself. In the second place is the active understanding in itself, which is related to the mental categories as the eye to things seen. The infinite form, the active understanding, immanent in matter, is the first, the basis, which develops itself. The process is, to a degree, the same as with the New Platonists. The essential thing with Bruno here is to conceive and demonstrate the organic processes of this active understanding.

γ. The thought is put more definitely as follows: Pure truth itself, the absolute light, man only approaches; his being is not absolute being itself, only the One and First is that. He rests only in the shadow of the Idea, which in its purity is light, but which also has the element of darkness in itself. The light of substance emanates from this pure, primal light, the light of accident from the light of substance. This is the third in the first, which we find in Proclus. This absolute principle in its unity is, according to Bruno, the primal matter, and he calls the first act of this principle the primal light (*actus primus lucis*). The many substances and accidents cannot appropriate the full light, they exist only in the shadow; the ideas of these substances and accidents are likewise shadows. The evolution of nature proceeds from moment to moment; the created things are only a shadow of the first principle, no more the principle itself.

δ. Bruno continues: From this *superessentiale*—an expression also used by Proclus—the progression to the essences takes place, from the essences the progression to that which is, from that which is to its images and shadows, and this in a twofold direction—partly toward matter to be generated in its womb (these shadows appear in a natural manner), partly toward sensibility and reason, by the power of these to be recognized. The things are in all degrees of remoteness from the primal light toward darkness. But all things in the universe are closely connected, the lower with the middle, and the middle with the higher, the compound with the simple, the simple

with the simpler, the material with the spiritual, that the universe may be one, with one order and government, that there may be one principle and purpose, one first and last; and so, in harmony with the lyre of the universal Apollo (an expression which occurs also in Heraclitus), the lower can be traced back, step by step, to the higher, as fire is transformed into air, air into water, water into earth, and *vice versa*—all having one and the same essence. The descending scale is the same as the ascending, making a circle. Nature, within its limits, can produce everything from everything; and so the understanding can recognize everything in everything.

ε. The *unity of opposites* is explained more particularly as follows: The difference of the shadows is not a real antagonism. Opposites—the beautiful and the ugly, the agreeable and the disagreeable, the perfect and imperfect, good and evil—are held in one and the same conception. The imperfect, the evil, the ugly do not have a special ground of their own, in positive ideas. They are known in and through another conception, not in an independent conception pertaining to themselves; such a conception is nothing. This peculiarity or independence of the imperfect, evil, etc., is the not-being in being, the defect in the effect. The original understanding is the primal light. It pours out its light from the innermost to the outermost, and draws it back again from the outermost to itself. Every being can appropriate some of this light, each according to its capacity.

ζ. The real in things is precisely this ideal, not the sensible, the perceived, or the individual; that which is usually called real, the sensible, is not-being. Whatever happens under the sun, whatever inhabits the realm of matter, falls under the conception of vanity and nothingness (finitude). Seek the firm ground of ideas, if thou art wise. This pure light of things is precisely their *knowableness*, having its source in the original understanding and harmonizing with it; that which has not being is not known. That which is here contrast and difference in the primal understanding is harmony and unity. Seek, therefore, whether thou canst identify the images which thou receivest, whether thou canst make them harmonious and one; so thou willst not weary thy mind, nor obscure thy thought, nor confuse thy memory. Through the idea which is in the understanding, a thing is better comprehended than through the form of the natural thing in itself, since the latter

is more material; but comprehended most perfectly through the idea of the object as it is in the divine understanding. The distinctions which appear here are there no distinctions, but all is harmony. This thought Bruno sought to develop—urging that the determinations native to the divine understanding correspond to those which appear in the subjective understanding. Bruno's art consists in determining or defining the universal system or scheme of form, which comprehends everything, and in showing how its moments are represented and expressed in the various spheres of existence.

η. Bruno's main endeavor, therefore, was, according to the Lullian art, to exhibit the All and One as a system of regular, classified determinations. He specifies the three spheres, after the manner of Proclus: 1, the *primal form* (*ὑπερουσία*), as the originator of all forms; 2, the *physical world*, which makes impressions of the ideas upon the surface of matter and multiplies the original image in countless reflections; 3, the form of the *rational world*, which numerically individualizes the shadows of the ideas for the senses, brings them into the One, and raises them into general conceptions for the understanding. The moments of the primal form itself are *being*, *goodness* (nature or life), and *unity* (this, too, we have substantially in Proclus). In the metaphysical world, it is thing, good, principle of plurality (*ante multa*); in the physical world, it reveals itself in things, goods, individuals; in the rational world of cognition, it rises from things, goods, and individuals. The unity is what restores or brings back; and Bruno, distinguishing the natural and metaphysical worlds, seeks to frame his system of determinations so as to show at once how a thing appears in a natural manner which exists in another manner in thought or ideally.

Endeavoring to comprehend this relation more completely, Bruno views thought as a subjective art and activity of the soul, representing within, conceptually, by inner signs as it were, that which nature represents without, by outward signs. Thought, he says, is the capacity to appropriate this external handwriting of nature, as well as to reflect and actualize the internal in the external. Bruno places this art of inward thought and accordant outward organization, and *vice versa*, which the human soul possesses, in the closest and most intimate connection with the art of universal

nature, with the operation of the absolute world-principle, by which everything is formed and fashioned. It is one form which is developed; it is one and the same world-principle, which forms the minerals, plants, and animals, and which thinks and outwardly organizes in man; it only expresses itself, in its operations in the world, in infinitely varying modes. Within and without is one and the same development of one and the same principle.

These various handwritings or symbols of the soul, through which the organizing world-principle reveals itself, Bruno endeavored to define and systematize in his "Ars Lulliana"; and he therein adopts twelve fundamental types, classes of natural forms, as a basis: *species, formæ, simulacra, imagines, spectra, exemplaria, indicia, signa, notæ, characteres et sigilli.* Certain types are related to the external sense, like the external forms, images, and ideals (*extrinseca forma, imago, exemplar*), represented by painting and other plastic arts, imitating their mother nature. Some are related to the internal sense, in which—in respect to measure, duration, and number—they are enlarged, extended in time, and multiplied; of this sort are the creations of imagination. Some are related to a point common equally to several things; some are so discrepant with the objective constitution of things as to be utterly chimerical. Some, finally, appear to be peculiar to the art, as the *signa, notæ, characteres et sigilli;* which give the art so much power that it appears to be able to act independently of nature, beyond nature, and, if the thing involves it, even against nature."

So far, on the whole, all is well. The scheme is worked out on all sides. This attempt to exhibit the logical system of the internal Artist, the producing thought, so as to make the forms of external nature correspond to it, is deserving of all praise. But when this praise is given, and the real greatness of Bruno's conception acknowledged, it must still be said that the determinations of thought here are superficial, lifeless types, like the schemata of the philosophy of nature in recent times; he merely enumerates the moments and antitheses of the scheme, just as our philosophers of nature developed the triplicity in each separate sphere, viewed as an absolute. The points beyond, or the more determinate moments, are only heaped together by Bruno; he gets into confusion when he attempts to represent them by figures and classifications.

The twelve forms, which are made a basis, are neither deduced and united into one complete system, nor is the further multiplication deduced. Bruno wrote several works upon this point (*De Sigillis*), the exposition seeming to be different in different works; the main point is that things in their appearing, or as phenomena, are as letters and signs, corresponding to a thought. The general idea, as opposed to the Aristotelian and scholastic dispersiveness, in which each determination was only fixed independently, is certainly to be praised. But in the development of the idea he gets mixed up with the Pythagorean numbers, and is fantastic and arbitrary; in places one comes upon metaphorical and allegorical groupings and couplings, where it is utterly impossible to follow him. In this attempt to reduce everything to order, everything runs together in the wildest disorder.

But it was a great point, in the first place, to get hold of the idea of unity; and it was a great point to view the universe in its development, in the system of its determinations, and to show how the external is a sign of ideas. These two achievements distinguish Bruno in the history of thought.

NOTES AND DISCUSSIONS.

KANT ON THE INFINITE DIVISIBILITY OF SPACE.

[We reprint the following extracts from Professor John Watson's "Kant and his English Critics" (pp. 246–250). His excellent discussion of Kant's "Metaphysical Grounds of Natural Science" we have before alluded to (J. S. P., vol. xv, p. 222). The statement here given is Professor Watson's own summary of the Kantian treatise.—Ed.]

As each part of space is divisible to infinity, so also is each part of matter which occupies space. And the divisibility of matter means the physical divisibility of its parts. Each part of matter may therefore be regarded, like each material body, as a material substance divisible to infinity; for a material substance is definable as that which is movable in itself.

This proof of the infinite divisibility of matter overthrows the theory of the monadists, who suppose matter to be composed of indivisible points, and to occupy space,

purely in virtue of its repulsive force. On this view, while space and the sphere of activity of a substance is divisible, the substance itself, which occupies space and manifests force, is not divisible. But, as has been shown, there is no point in an occupied space which is not capable of being regarded as a material substance endowed with repulsive force, and as itself movable, because capable of being acted upon by other repulsive forces. This may be still further shown in the following way: If we suppose any monad, with a given sphere of activity, to be placed at a certain point; then, as space is divisible to infinity, we can suppose an infinity of monads to occupy a position between the first monad and the point to which its resistance extends. Each of these, as possessed of a force of repulsion of its own, and as repelled by the other, must be movable; and hence, there is no part of space occupied by matter which is not movable; in other words, each part of matter is a substance endowed with a moving force. Matter, therefore, is not indivisible, as the monadist supposes, but infinitely divisible.

Observe, however, that, when matter is said to be divisible to infinity, it is not meant that it is made up of an infinite number of parts, as the dogmatic philosopher maintains. Divisibility is not identical with dividedness. If space and matter were things in themselves, we should indeed have to admit either that matter is composed of a finite number of parts, or that we have no knowledge of it. But when we see that matter in space is not a thing in itself but a phenomenon, we can also understand how it may be divisible to infinity, and yet may not be composed of an infinite number of parts. A phenomenon exists only in relation to our thought of it, and hence matter is divided just in so far as we have carried the division. The mere fact, therefore, that we can carry on the division to infinity does not show that there is in a material body actually an infinite number of parts. Nor can we affirm that the parts of matter are simple, because these parts, as existing only in relation to our consciousness of them, are given only in the process by which they are divided or mentally distinguished. Matter, therefore, is not composed of parts which exist as simple in a thing external to knowledge, but of parts determined as such in the process by which matter is known as divisible.

It has been shown that without impenetrability there could be no occupation of space at all, and that impenetrability is just the capacity by which matter, in virtue of a moving force, extends itself in all directions. A force of extension, however, cannot of itself account for the existence of matter as having a definite quantity. In the first place, there is no absolute limit to extension in such a force itself; and, in the second place, there is nothing in the nature of space to prevent the infinite expansion of matter; for the intensity of the force of extension, while it will no doubt decrease as the volume of matter expands, can never sink down to zero. Apart, therefore, from a force of compression acting contrary to the force of repulsion, matter could have no finite quantity in a given space, but would disperse itself to infinity. Nor can the limiting force of one material body be found in the repulsive force of another material body, since the latter also requires a force of compression to determine it to a finite quantity. Besides the repulsive force with which a body is endowed, we must therefore suppose it to have a force acting in the opposite direction—*i. e.*, a force of attraction. And this force, as essential to the very possibility of matter, cannot be peculiar to a certain kind of material body, but must be universal. Both the force of repulsion and the force of attraction are therefore essential; for, while, by the former, matter would disperse itself to infinity, by the latter it would vanish in a mathematical point. If merely a force of attraction were to act, the distance between each part of matter would be gradually lessened until it disappeared altogether, since one moving force can only be limited by a moving force

contrary to it. These, it may be added, are the only ultimate forces; for as matter, apart from its mass, may be considered as a point, any two material bodies must either separate from, or approach to, one another in the straight line lying between them; and the motion of separation is due to repulsion, the motion of approximation to attraction.

Matter, then, is constituted by the two opposite forces of repulsion and attraction. There is, however, an important distinction between the mode of operation of these forces. Repulsion acts only by physical contact, attraction only at a distance: (1) Physical contact must be carefully distinguished from mathematical contact. The latter is presupposed in the former, but the one cannot be identified with the other. Contact, in the mathematical sense, is simply the limit between any two parts of space, a limit which is not *contained in* either of the parts. Two straight lines cannot in themselves be in contact with each other; but, if they cut each other, they meet in a point which constitutes the common limit between them. So a line is the limit between two surfaces, and a surface the limit between two solids. Physical contact, on the other hand, is the mutual action of two repulsive forces in the common limit of two material bodies, or the reciprocal action constituting impenetrability. Attraction never acts by physical contact, but is always *actio in distans*, or action through empty space. For, as has been shown, a force of attraction is essential to the determination of any given material body as to intensive quantity, and this force must act independently of the physical contact of bodies—*i. e.*, through empty space. To the conception of attraction, as action at a distance, it is commonly objected that matter cannot act where it is not. How, it may be asked, can the earth immediately attract the moon, which is thousands of miles distant from it? To this Kant replies that matter cannot act where it is, on any hypothesis we may adopt, since each part of it is necessarily outside of every other. Even if the earth and the moon were in physical contact, their point of contact would lie in the limit between the two parts touching each other, and therefore each part, to act on the other, must act where it is not. The objection, therefore, comes to this, that one body can only act on another when each repels the other. But this makes attraction absolutely dependent on repulsion, if it does not abolish attraction altogether—a supposition for which there is no ground whatever. Attraction and repulsion are completely independent of one another, and are alike necessary to the constitution of a material body.

SENTENCES IN PROSE AND VERSE.

SELECTION BY W. E. CHANNING.

He took it in his [hand], which was well-formed, thin, and ascetic; its clasp, rarely given, was possessive, not alone of another, but of himself; now it closed around Beth's, until she felt hers unbreakably bound.—*Bethesda by Barbara Elbon.*

What is more charming than a glimpse of a scene familiar to us, through a stranger's discerning eyes? Don't we all enjoy a painting better of something we know?—*Ibid.*

They [politicians] crystallize theories into actions, and show the result in a state.—*Ibid.*

He had a persuasive quality that relied little on words, but made one feel, insensibly as it were, that what he wished was easiest and best.—*Ibid.*

The future was his thought, and there was all the difference between him and Bethesda that lies between activity and passivity. She was perversive in her readiness to be worked upon, unconscious though it were. —*Ibid.*

A luminous night's rest, when she never fell so soundly asleep but that she was conscious of an unusual brightness in her mind.—*Ibid.*

That inimitable French faculty of seizing the very arrow-head of thought, to which the language lends itself in an unequaled manner.—*Ibid.*

He considered that character, which allows its whole self to be seen by any one who cares to look, as a boorish, ungraceful, and almost immoral one. Garments are as necessary to the soul as to the body in civilized society.—*Ibid.*

He was a man of remarkable personal magnetism, and a woman of as positive a nature as Bethesda's, and one who possessed no little personal electricity herself, naturally sprang away from the attraction to which she had half unwillingly and half unconsciously yielded.—*Ibid.*

"Ah, the little more, and how much is it?
And the little less, and what worlds away!"
Browning [Motto of Chapter.]—*Ibid.*

"There are some things one may know," he said, catching her eyes with a steady grasp of his own.—*Ibid.*

She, whose sensitiveness felt like a mirror the blurring of a too-close breath.—*Ibid.*

The small-brained, exquisitely dressed woman actually smothered a sigh.—*Ibid.*

The vividness of new life on every leaf—the blue skies lifted themselves and intensified more and more like the beloved Italy.—*Ibid.*

The meadows and the hill-sides were glittering with fire-flies, as if the overheated earth were sending up slow sparks of fire; the glow-worms burnt their green lamps in the grass, and in the sky there was heat-lightning like involuntary thought. Sometimes it was eerie moonlight, such as pure elves might find amid the ice-caverns of the glaciers; again, it lit the clouds with the flaming of a wild hope; again, it was the bright amber of assurance, or the rich purple of suffering made into joy; and at times it seemed to the entranced girl like a vision of heaven itself. [A late spring evening near Florence.]—*Ibid.*

The girl was exceedingly innocent—not through ignorance, but dauntless faith in those she once liked.—*Ibid.*

"Every spendthrift to passion is debtor to thought." *Owen Meredith* [Motto to Chapter.]—*Ibid.*

The light irradiated her face and brought out the glory of her hair; her eyes gazed at the dazzling splendor unblenchingly, for she felt a joy that made her strong to bear any radiance. Her soul seemed to expand with a twofold life and leaped within her. She felt an intense desire to spring forward, and delay the sun in its setting, just that time might let her drink deeply of the happiness this hour held.—*Ibid.*

That fine analysis of human nature which makes the French mind, like the Greek, stand alone.—*Ibid.*

I have been pinning my mind so assiduously to its work to-day that it is full of holes, and ideas would go through as if it were a sieve.—*Ibid.*

You analyze and idealize man as I analyze and idealize institutions. We appreciate the same characteristics; we admire the same qualities. But you are a woman, and I am a man; we shall necessarily see different sides of life; we shall have different experiences. I could give you suggestions with perhaps some virile force, and you lend them form, and body, and grace.—*Ibid.*

There is a vigor of purpose, a vivid comprehension of the difference one soul can make that infuses youth with a grandeur all its own. Each soul is the possible pivot on which the world may turn, and youth feels this with an intensity that makes promises seem deeds and tendencies fulfillment.—*Ibid.*

She felt as if her mind had an immensity as large as the deep-blue heavens, and with as many points of palpitating white light. They might be worlds or they might be unknown fires. The universe was filled with the glad exultation now thrilling through her.—*Ibid.*

She had yet to learn that abstract right is above any conscience, and it we must obey. Principle was not developed in her. The instincts of her nature were true and noble, but the quivering needle of a compass is not more unsteady in comparison to the polar star than conscience in comparison with principle.—*Ibid.*

Days passed, June came, and brooded with a delicious sweetness over land and sea, over flowers of the earth and flowers of the mind. Nature unclosed and let the warm sunbeams steal into the furl of every leaf; white lilacs bloomed; roses smoothed their creased young petals, and expanded their delicate filaments in rich development. Everything, in fact,

was redolent of life, and shook into the air new vitality, and beauty, and strength.—*Ibid.*

He looked up with the dreaminess of his tone in his dark eyes and met hers. They reminded him of some shadowed cove, where the limpid water lay deep and still, only the tide throbbing far beneath the glittering surface.—*Ibid.*

Birds sang exultingly; trees and flowers gleamed in the growing light; a damp breeze blew over the forest and refreshed his hot brain. He longed to be away, amid the everlastingnesses of Nature. . . . For hours he wandered through the morning glades, with Nature smiling in his face, and the birds caroling overhead. His electric susceptibility decreased here, where all was the same as for years and years. A forest could not be made or destroyed in a day, an hour, an instant.—*Ibid.*

BOOK NOTICES.

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